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Is Alan Sugar crazy? - the absolute truth on page 12 (honest)

# NEW COMPUTER EXPRESS

First news, first reviews - every week

GREAT  
LAUNCH ISSUE

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The big surprise in store  
for Amiga owners

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US Gold's Thunderblade takes on 17 other contenders - page 46



# ATARI PREPARES SOFTWARE ASSAULT

"I expect us to be competing with the likes of US Gold" - senior Atari figure

Atari is about to unleash a major assault on the software market with games and business programs due for all leading machines - including arch-rival Commodore's Amiga.

Four separate labels are to be unveiled, covering specific software areas. Atari is currently despatching games overseas and the like to numerous software developers. Programs are also being imported from Europe and North America.

Over the next year 24 titles will appear on the ST, rise on the PC and another six on the Amiga. The games will also be licensed out to interested parties for release on the Spectrum and C64.

Atari is hoping that its name and financial clout can propel it into the software superleague of the likes of US Gold and Caves.

The firm also argues that its hard-ware push up market will provide a platform for PC software sales.

The first labels consist of Atari Games (arcade games), Atari Mindgames (intellectual games and puzzles), Atari Battleships (strategy) and Atari Ryan Stone (business and graphics pack).

Atari Games will kick off with some 16-bit conversions of old Atari-style 8-bit games such as Star Raiders. New games are being developed by Liverpool-based programming house Frames (hence - the name). Frames' past experience includes work for the Imagica label.

Mindgames first offerings include Japanese board game Go-Moku as well as Backgammon. Battleships, it is claimed by Atari, will cover "waves from Trafalgar to the future".

On the business front Atari has immediate plans for graphics programs, as well as Calamus DTP from Germany, a database from Canada

and another package from Poland. First up though will be an ST paint program.

One senior Atari figure told Express: "An awful lot of development money has gone into this and I expect us to be competing with the likes of US Gold. As a hardware manufacturer we've come to accept that we can also be a software house."

On the dull notion of producing software for the Amiga from arch rival Commodore, he said: "It's always nice to be able to make money out of them."

He added: "By next Christmas, people will look at us as a powerful software publisher. We want to be as independent as possible." To that end Atari is planning to move its software development side completely away from its UK HQ in Basingstoke.

A year past back, software activity was concentrated into hardware manufacturers: Sinclair, Commodore, Acorn and Amstrad all dabbled with games and business packages at some stage. Each cut back, virtually citing a desire to concentrate on



● ST: 24 new packages from Atari over the next year

hardware, financial difficulties or problems in attempting to compete with software specialists.

Only Amstrad is currently still active in software, though on a much more modest scale than before. For Atari, the move represents a return to the days of AtariSoft - though that name won't be used this time round.

## Gambling Cascade stakes reputation on bookies' bet



High street bookmaker William Hill has thrown down the gauntlet to software house Cascade which claims that its horse racing tipster program has a 72 per cent success rate.

William Hill is offering Cascade £50 in free bets if the Firm Master program makes a profit then Cascade gains the winnings (and the principle). If it fails to score then William Hill feels it has made its point.

Either way the bookie is donating the money to a charity of New Computer Express's choice.

The duel is taking place this Wednesday with a

computer set up in William Hill's Harrogate branch - near Cascade's offices.

The challenge comes as a direct response to Cascade boss Nigel Stevens claiming that major bookies are depressed about Firm Master's success. Allegedly, Cascade's longest losing streak is only six races.

When contacted by us, William Hill's Graham Sharpe retorted: "People have bad systems since the year dot and we're still in business. There's no way we would be concerned by this gentleman's computer program."

Nevertheless, Cascade reckons that the Department of Trading Standards has given Firm Master the 72 per cent success rate. One employee at the firm claimed to be £800 up on \$1p and £1.00 stakes.

But Stevens warned that Firm Master is best for a whole season and could not be tested properly on the basis of five bets. He said Cascade would take up the gauntlet to enter the spirit of things.

Firm Master is currently available through mail order at £99.95. It should be in the shops by Christmas in most major formats.

## Chip lull prompts Opus chop



● PC II: Back to the past

Just the merest glimmer of hope on the chip front has been signalled by PC clone manufacturer Opus.

Abiding 68-Rain chip problems have variously made chips scarce, expensive, or both for micro firms this year. But now Opus has detected a lull, and has topped £100 off some of its machines. The PC II reverts to £295 and the PC V is back down to £1,295.

Prices were originally increased by the firm in the spring, in line with the Amstrad and Atari hikes.

## Return of the Ultimate Wulf

Golden oldies from Ultimate such as *Atic Mac* and *Sabre Wulf* are soon to appear as 16-bit games courtesy of new software house Crystal.

And hard-core 2000AD character *Negus Trepper* has once again become the focus for an ambitious computer game project via a Crystalis licence deal with PC magazines. The original game was published by domestic software house Piranha and failed to impress. Crystalis' version is promised to be "completely different".

The original Spectrum versions of *Atic Mac* and *Sabre Wulf* (circa 1984) were number one hits for Ultimate and will be on the ST and Amiga by next Easter.



● Sabre Wulf: now 16-bit



● PC2000: Early arrival

# AMSTRAD PC2000: HERE AND NOW!

Amstrad's new range of 286 PCs has arrived in the UK - months earlier than publicly stated by Alan Sugar himself.

As of this week the machines are available in 80 Comet Business Centres across the country. This confirms with earlier grocery assurances from Sugar that supplies would be steady until the new year. When the PC2000 line up was unveiled on September 13th he warned that the concerning D-Ram shortage would hamper availability, saying that there would be none until January at the earliest.

One explanation for what has happened with the PC2000s is that Amstrad had probably pointed the picture blinder that it needed to, in order to make the eventual "early" arrival seem like a victory against the odds for the firm. This was foreshadowed in a confidential document obtained from Amstrad at the time of the launch. It contained skeptical expectations which directly conflicted with Sugar's own public view.

Comet is selling four models of the 286 ranging from the £749 double disk drive 38600 version to the £1,249 hard drive colour monitor

machine.

As a supplier of Amstrad computers Comet is becoming increasingly important. It is already the exclusive seller of the low end Amstrad PC 200. It has been suggested that previous Amstrad favourite Decos has fallen from grace having filled its shelves with competitor machines such as Olivetti's low cost PC.

## To Beeb or not to Beeb

The much talked about BBC emulator for the Amiga will cost £30 when it finally becomes available at the end of this year.

A prototype will be on view at next week's Commodore Show with Commodore itself boasting that it will run Beeb software on the Amiga later than the Beeb itself.

There has also been talk of the emulator being bundled with the Amiga at some stage in the future. Commodore is merely calling that "a possibility".

Currently, the software is working under the name Freelancer although that will be changed. Commodore's top brass feel it's "too incoherent" for the steady education establishment toward which the emulator is being aimed.

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## Shoot from the Lip...

...the weeks must provide signs

"Some could easily be the next Amstrad. I have every belief that. What's more, they'll be bigger and better than Amstrad".  
Brian Davies of Commodore (and son of Koolhaas, IMHO, not yet...)

"The PC 386 is machine at best and the C286 graphics are just appalling for games. To the engineers: I have to say 1. It is rubbish 2. No, there aren't as many games and 3. If you read it side by side with an Amiga or an ST, you'll have to be a real idiot to buy the PC 386".  
Jack Schofield, editor of the Computer Question

"Computer power is very boring when viewed from the outside. There's very dry when com-

pared with Top of the Pops. They're not got some of the spiky bits in the headlines about them".

Propagandiser David Little, Virus Eaters

"Especially PowerFront provides the most significant advantages in present advertising and time-planning software since the 800s".  
ATA Development, making the robust claim this century

"We want my name on the future of the machine? You mean leaving it all. I know...!!" (He shows the machine and shouts me "I'm not told you".  
A senior Amstrad person who will remain anonymous if he sends a cheque to Express Blackwell Center at the usual address

## The write stuff for your PC

Computer users will soon be able to write longhand onto their PCs.

Wang has launched a system called Freestyle which enables users to write on a plastic pad using a lightpen. The data then appears on screen. Voice comments can also be transmitted onto the monitor.

Wang is claiming that Freestyle will revolutionise documentation and is re-

fers its "as easy to use as writing on a piece of paper or picking up a telephone".

Now the bad news. The system, including plastic tablet, pen and software costs around £1,200 with a voice module weighing in at just under £1,000.

Wang expects Freestyle to be here by early spring. It works on any high resolution mono, or black and white monitor.



● Freestyle: Write on!

SHOCK  
SEX  
HYPE  
SCAM  
PROBE

Adult computer games are being imported from America by UK company A-Soft.

Its boss Tim Harris sees a growing market for titles such as Sex Visions from Outer Space. Based on graphics and text, the adventure game is claimed to feature plenty of nudity and squalid innuendo.

However, this appears to be little more than a scam. Harris admitted to Express that "the sexual aspect is just a bit of hype".

He added: "It took me four days before I saw anything worthwhile." Nevertheless A-Soft is set to continue importing these games from the States with a new one appearing every ten weeks.

Amiga-owning services seeking Sex Visions will have to pay £24.95.



● Visions: A scam?

AMIGA GAMES  
CONSOLE PLANNED

EXPRESS  
EXCLUSIVE  
by Colin Campbell

Commodore is planning to launch a low cost games machine based on the Amiga.

Developments are under way in the US but it is understood that the machine is still in an embryonic stage. Details such as price and time of availability have yet to be decided.

There has long been talk of a C64 console - but with Atari, Sega and Nintendo launching 16-bit games machines this would have been seriously outdated. It is known that Commodore has been disturbed by Nintendo's extraordinary success in the States.

Some have argued that the Amiga's profile as a multi-purpose computer would be damaged by the arrival of such a machine. Commodore itself has argued in the past that it is a computer firm, rather than a games machine company.

Nonetheless, well-placed sources have told Express that a console is due in the next few months. One possible launch date would be January next year, at the Consumer Electronics Show in the US.

Commodore's UK boss Steve Franklin would neither confirm nor deny that any console plans exist. But he hinted that any console under development "wasn't a C64" adding: "I can't say any more than that."

## 16-bit: the console giants begin to stir

Commodore's news follows 16-bit developments from all the other major console firms.

● **Atari:** As revealed by Express last week (in preview issue bundled with ACE magazine) Atari plan next year to be launching an ST console at under £100. That should be here in force well before Christmas '88.

● **Sega:** A 16-bit console should arrive in the UK by September. It will run exist-

ing Sega software.

● **Nintendo:** A new machine is claimed to be ready but it won't be seen here for two or three years. The company is waiting for a software base to develop.

● **Konix:** Though not 16-bit, Konix's first console is believed to be scheduled for launch early next year with a price tag close to C64. Pre-production versions are currently undergoing to be winning software developers.

## TOP TEN full price

			SEGA	CD	ST	AMIGA	PC	ATARI	IBM	386	486	MAC
1	1	Last Ninja 2	System 3	●	●			●				
2	2	Daley Thompson's Olympic Challenge	Cosmi	●	●	●	●	●				
3	3	Football Manager 2	Addictive	●	●	●	●	●				
4	4	Out Run	Sega/ST Gold	●	●	●		●				
5	5	Flats 'n' Throilles	Elite	●	●			●				
6	14	We Are The Champions	Cosmi	●	●			●				
7	7	Supreme Challenge	New Jolly	●	●			●				
8	3	Starglider 2	Nintendo			●	●					
9	12	Gold Silver And Bronze	ST Gold	●	●			●				
10	10	Talk Coin-ops	Cosmi	●	●			●				

figures - last month's position

COMPILED BY GALLUP

## TOP TEN budget

1	1	Joe Blade 2	Players
2	2	Bomb Jack	Encore
3	5	End Zone	Alternative
4	N	Commands	Encore
5	11	Gauntlet	Klax
6	9	Footballer of the Year	Klax
7	3	Air Wolf	Encore
8	4	Axe of Aces	Klax
9	16	Advanced Pinball Simulator	Codemasters
10	7	European Five-a-Side	Freemint

figures - last week's position

## Ocean picks up The Gauntlet...

Ocean's perchance for licences continues with the news that *Idol* TV show *Ran The Gauntlet* has been tied up.

Featuring a whole range of weird amphibious vehicles and off beat racing events the game, it is claimed, will stick closely to the TV formula.

The show has gained some success amongst younger viewers with a series of motor buggies, water cycles and difficult courses.

A game though won't be seen until next Easter - about the time when a new series starts.

This latest deal follows Ocean tie ups for Schwarzenegger movie *Red Heat* and gangster film *The Untouchables*.

## ...and Grandslam grabs Greavsie

TV soccer dinosaur *Saint* and *Greavsie* are to appear as a computer game next Easter.

*Grandslam* will be forwarding the two men in a sports quiz title similar to the board game. Always on for the licences, *Grandslam* is reluctant to have looked out a fair whack for the use of the names.

Meanwhile, the firm is on the verge of tying up another footballing licence likely to appear at around the same time as *Saint* and *Greavsie*.



• Saint and Greavsie: Doing the quizness

# D-RAM WINDFALL BRINGS FORWARD NEW ATARI PCs

The launch of Atari's PC4 and PC5 machines has been brought forward by three months as a result of the firm easing its dire D-Ram chip supply headache. The supply improvement will also allow more STs to be put on sale before Christmas.

Atari says that its D-Ram problem has been solved following agreements with two chip manufacturers - German based Siemens and a Far Eastern firm.

Chip problems have constrained the firm for much of this year. Availability of the PCs has been delayed with those D-Rams in Atari hands being used in STs.

The improvement in ST supplies is a direct contrast to the situation this time last year. Shortages were rife and at one point Atari was actually forced to smuggle batches of machines into the UK. Hardware

manufacturers though are renowned for waiting about shortages since such talk generally sells wiles. This policy appears to have been rejected for the coming selling season.

The PC4 286 and PC5 386 will be generally available from the end of this month with retail prices of £1,299.99 and £2,599.99 respectively.

## Efficient chips

Never mind the D-Ram chip shortage - the super chips are coming. Now besides the size of a fingernail which can store the contents of more than five average paperback are due to tested by Japanese giant NEC. Or, to put it another way, these chips can hold 16 million bits of basic information - around 600,000 words. And to put that another way, around half a year's worth of this magazine could be fitted onto a single chip.

## The new machines

### PC4

80386-based microprocessor; switchable clock speed 12MHz to 8MHz; 512K RAM expandable to 1Mb; VGA, EGA, CGA, MDA, HGC 720 x 348 mono graphics; 88 x 24 mono text; 5.25" floppy disk; external connector for ST and PC drives; two serial ports; and one parallel port.

### PC5

Intel 32-bit 80386; clock speed 6MHz and 16MHz; 1024K of RAM; 64K of ROM; 5.25" floppy disk; optional VGA, EGA, CGA, MDA and HGC; and optional mouse, serial port and parallel port.



• PC5: Atari cashes in chips.

## Multi-tasking? Logotron's game

How useful is a multi-tasking game? Logotron's decision is a corker of an idea and is an attempt to prove it, in launching the first such offering for the Amiga.

Prospector from Logotron is in fact a broader version of maze game *Xen* already available on 8-bit machines and the ST. This week though has been revealed thicker and thicker with a few more

rooms and the like. Also, those who undertake low level productivity work on their Amigas can dip in and out of the game at will - that at least is the theory.

"You can do a couple of things at once," offered Logotron's Herbert Wright. "People working on their Amiga might feel like some relaxation so they can easily spend half an hour on Prospector."

## Digging the Amiga

The impossibly cold months are upon us and outdoor activists are seeking little shelter - not least among them are the archaeologists.

Diggers working on an Anglo-Saxon and Roman site in North Yorkshire are keeping busy by studying the entire site on an Amiga. A 2D map of the whole seven acres is kept on an A2000's database and archaeologists can zoom in on any particular area and go into full analytical mode.

Also, they are keeping video sequences and stills of finds on the machine. That whole caboodle is seen to be presented as an education database for budding antiquarians to ponder over.

# ARCADES: ST GAMES 'NOT GOOD ENOUGH'

Games written for home computers aren't yet good enough for the arcades.

There's the view of would-be games to coin-op converter Alan Nelson. His company East Midlands Leisure has spent the best part of one year tracking around the publishers for software to use in ST-based coin-op machines. The idea was that games could be changed regularly within the cabinets by simply swapping software.

However the games haven't spoken, taking an average of only £1.20 a day - something like a quarter of a normal arcade machine. Nelson says most software doesn't grab people in the same way that the Japanese coin-op games do. The games involved include:

- Thunderbox Blast - one of the least popular
  - Backlash from Novigen - "boring" says Nelson
  - Barbarian from Palace - high yield but still falling short of expectations
- Nonetheless Nelson is undaunted. He claims to have found a lack of enthusiasm from the software houses themselves. One deal which fell through after lengthy negotiations was with English Software (US Gold)



● Backlash: Too boring for coin-ops?

for the old favourite Levasthai.

He's hoped to sign up Logotron's Star Ray and Better Dead Than Alive from Kromarc International. The response for the others has been poor. I believe ST games can run on arcade machines. We just need games which can be taken at face value."

## IBM: patents are a virtue

Taiwanese PC clone manufacturer Mitac has followed Amstrad's lead and signed a patents agreement with IBM.

This, in theory, gives both companies the right to sue each other intellectual property. However, central to the deal is IBM's PS/2 technology which Mitac will be using for a new range of machines currently under development.

The deal will cost Mitac between one and five per cent of all sales depending on the product and where it is sold.

Also, IBM has gained a one per cent royalty on all price Mitac PC sales as recompense for the use of its patents. IBM has long been threatening that it will seek compensation from companies infringing patents without prior agreement. It has been trying to sue the lesser of PS/2 rights being dependent on paying as MS-DOS royalty.

Although a number of leading manufacturers have signed PS/2 rights, there is still a body of opinion that the new standard faces a long struggle before it can be deemed to have succeeded.

## Programs which speak to the blind

Blind computer users, hardly surprisingly, face numerous problems not fully appreciated by most software houses.

So developer ACK Data presented its Text to Speech PC program to various associations for the visually handicapped to be tested.

They pointed out that when errors occur blind people cannot know what's going on. On screen error messages are useless.

The upstart ACK is now releasing the £300 program so that it uses its speech facility to explain and help put right any errors as they occur.

## A chance for the boss to do better

Spare a moment for the boss. It's possible that he may even be aware of his shortcomings in handling employees.

With this in mind Ivy Software is offering an £80 PC package geared to helping managers handle their people properly. The manual-driven course is said to cover most of the potential "there and's" disasters and includes written tests.

If you see one of the packages in your boss's office, you'll know he's trying.



"The magazine coming in on Platform 7 has totally vanished."

British Rail has found itself in a scrambling of a tight spot after losing an ST User.

Not the person that is, but the monthly magazine.

Publisher Database contacted the whole December edition to Red Star which had

the presumably sought task of delivering the finished job out to its printer. Much to the dismay, even horror, of Database, the thing was missing.

Database's unfortunate pursues had the inevitable and basic

task of redacting the whole edition of ST User. Hardly surprisingly the publisher is absolutely livid with BR and is taking legal advice in order to gain "lost insubstantial" compensation.

## Snippets

### Ace pack on the cards

Archimedes graphics leads may be intended to warn that Ace has upgraded its £45 3D Euclid package to incorporate new lighting, shading and contrast effects.

### Amiga to hear more

A new music composition language which uses straight code as opposed to hanging notes on bars is soon to be launched by Ariadne for the Amiga. Open 1 should suit seasoned avid buffs and will cost around £50.

### Hybrid drives hard bargain

A range of hard disk drives for the Atari ST will soon be available from music specialist Hybrid Arts. For those on a tight budget it's worth noting that the entry level disk top HD077 Megabyte version costs £1,499.95. Yes, really.

● One they made earlier

## FIVER FAVOUR

Two Mail Office programs for the ST have had a five-rpopped off their price - before they've even been launched.

The spreadsheet and communications modules have both been dropped from £29.95 to £24.95. Publisher Database puts this down to "recognising that at the lower price more will be sold". Or, to put it another way, recognising that at the higher price rather fewer would be sold.

Each of the budget priced modules is complete with the likes of a text editor and calculator. Database reckons it's cheaper than anything else available and "technically more advanced".



● Mail Office: Cut to 5p

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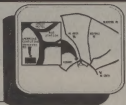
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# A school crammed with Archimedes

A new era in learning is being ushered in by the Government's education officials, and with it a new model student — the fully computerised version.

Its flagship is a 'new school' in Solihull — Kingshurst — named as the first City Technology College.

In essence, the establishment is an extraordinary learning centre crammed with Archimedes computers, a barrage of technical trappings and a modern office look throughout quite alien to the familiar classroom structure. Mr Chop has finally been replaced by silicon chips.

The Department of Education and Science is planning two more CTCs next year and others to follow.

Not surprisingly, the arguments are fierce. Education traditionalists say that computers, whilst necessary, are only a minor aspect of schooling.

Industrialists say that a complete overhaul of the system is needed to produce a computer-literate generation of fresh local employees.

## Heaven sent

In the classrooms of Kingshurst, pupils are kitted out with scores of Archimedes, many of which are networked across the school. There's also talk of providing the students with computers for the home at discount prices. Aston can only raise its eyes heavenward to heaven.

Then there's expensive kit in the science and languages departments (including satellite TV).

Subjects in which computers are used during lessons include the sciences, mathematics, geography and even English. Whether Daisy Thompson's Olympic Challenge will replace athletics isn't yet clear.

The Government is funding the CTC project through industry. Well, that's the theory. Industry hasn't been so generous or had been hoped.

Each school costs between £2 million and £7 million to set up. A handful of companies mostly based in the Midlands (in which plants there) contributed about half that figure.

## Best of British?

The choice of the Archimedes and, to a lesser extent, Research Machine, was obvious one. The government has long believed that education would be better served by British companies even if Aston is a well-loved subsidiary of Italian firm Olivetti.

Still, US firms also have a look at

## Three voices in the debate



### ● The Politician

Like his superior Kenneth Baker, JOHN BUTCHER has moved over from the Department of Trade and Industry. His background is in the computer industry.

Why were these schools introduced?

"People need to be aware of the computer as an all-important tool. It affects every business, industrial and management process. There is a need to be aware of what they do. No 16 or 18 year old school leaver should have any reason to be afraid or nervous of computers — which was the case in previous years."

But isn't the wealth of technology being doled out to the school less than the demand of other schools?

"There is a very generous provision of computers across the state sector in secondary and junior schools."

Are the CTCs a technologically form of the old grammar school system?

"CTCs are not selective. There is no 11 Plus. The recommendation for students comes from teachers together with the express wishes of parents."

Have you been surprised by the level of criticism aimed at the CTC scheme?

"Not at all. It's the usual forces of opposition kicking in. Parents in Labour-controlled local authorities don't like anything that smacks of speciality or excellence..."



### ● The Local Headmaster

MICHAEL CORRIGAN is the principal of the largest Comprehensive in Solihull — Archbishop Grimshaw. He currently has some 3,100 students and is kitted out with some Reeboks and an Archimedes. Corrigan sees this as sufficient.

What's your objection to the CTCs?

"To put so much into one school is inelegant and not cost-effective. It's a kick in the teeth for the comprehensive system and it's been created in the teeth of verbal opposition."

It's part of the current philosophy that State education is a failure. The CTC is a flagship which Kenneth Baker has pinned his colours to."

Do you expect the CTC to affect the average intelligence of your pupils intake?

"I expect we'll lose a few but not too many. But it's difficult for parents to resist all the hype and media coverage. It's hard for parents who want the best for their children."

But isn't good to use computers in this way?

"With the resources available to us we've been able to make broad use of information technology with technical courses and media studies courses. But I don't think I'd want my 10 year old to be sitting in front of a computer all day."

4:1 or even less.

Nationwide, schools have an average of 18 computers — many of which have seen better days. Kingshurst has well over a hundred brand, spanking new ones.

Logically, that would suggest that the CTC students will step out

As 180 11-year-olds begin lessons at the first of a string of heavily computerised schools, COLIN CAMPBELL tunes in to a debate which could crucially affect both education and computing in Britain.



### ● The Industrialist

ALAN CARTER is the chairman and managing director of Hitec International, a company which makes gear boxes. He donates £500 a year to the CTCs, presumably rather less than fellow sponsors such as Austin Rover and Harzer.

Presumably you support the CTC?

"I'm in favour of what the Government is doing, but it's a shame that industry has to pay. I mean it's a laugh. It's all wrong."

If you take that view why has Hitec become involved?

"I disagree with the way it's been done but you can't duck out of responsibilities. We haven't donated much but if everybody did something then we wouldn't have such a shortage of skills. That's a problem we face every week."

Will computers help increase the level of skilled workers?

"Frankly I'd prefer to see managers and engineers going in and having some input. I mean the world isn't about computers. It's more than that. Academics teach everything possible except how to earn a living."

Are you surprised by the criticism aimed at the Government's door?

"If you don't do anything you get criticised and if you do something you get criticised. I could rant for two hours over that..."

trained with rather more than GCSE passes. And, it follows, they'll have rather more than their counterparts in the likes of Archbishop Grimshaw Comprehensive.

The employers of tomorrow will be left to decide whether or not CTC is a compromise for grammar school.

There's an IBM mainframe installed at Kingshurst as well as PS/2s using 2.11 version of Novell. And the Amps is under review for CTC as an design department.

In the North of England, the brands of note of students and computers is 70:1. In the CTCs it's likely to be

# EXPRESS

## PROUD OWNER

I'm the proud owner of a Tandy TRS 80 (with 16k memory expansion pack and word processing board) and I'm delighted to note that you have not devoted a single column to report from this one - EdB will cover this machine.

Are you oblivious to the fact that there is a huge body of incredibly active TRS-80 owners out there?

Am I not aware of the remarkable programs now available for this machine, such as the *Magical* and *Gross* simulators by my company Desktop Only-ist yet?

Darbyd Llangwylid, Bridgend

Yes, Sir

## I HATE YOUR GUITS

Dear Express

I use the word 'guit', softly because it is the traditional way of opening a letter. It is most definitely not intended as a term of endearment.

The fact is I hate your guts. For years now I have been able to discover all the interesting bits available in current magazines without actually buying them. Whenever a new issue comes along I take great pleasure in flicking through it at Mr Shop's local newsagency, noting the bits of value and satisfying myself that I would be wasting my money to actually buy it. I have saved myself a fortune this way.

Now shops come along, I try the same technique - and I fail. The fact is I took my eye and a half off it got through the last 22 pages and by that time Mr Shop was giving me even drier looks than the chairman to the paving Mayor.

How dare you pack so much into a magazine so that I now have to look out 480 a week or so that money could have been well spent - or tell a pair of a downmarket lager for example. It can make that last bit of hour and a half as you, you know, especially when it's my round next.

Please try to make your magazine a bit less interesting to future

Ivor Meenrath, Glasgow

We could see your point, Sir. No doubt there are other people computing wonders you could look at instead.

## PRINT TOO SMALL

I own an Amstrad PC and am overwhelmed by the quality of writing in the PC update

column at the back of your paper. Is Simon Williams a god? It seems incredible that an ordinary mortal human could know so much about so many things.

Please pass on the enclosed 250 note as a contribution to his expenses and then answer the first question. Why is it that you have to print the words of this genius so much anyway? The only way I am able to read his column is by cutting out the page and inserting it under a microscope. This of course is well worth the effort, however one pig of the fellow and a whole paragraph may be passed over.

Years in Institution  
Mrs S Williams, Black Torrington

Simon doesn't bring a god and we can confirm this. No god would be so useless as to accept a 250 note - even from its wife.

The print is small precisely because the writing is so good. There is a land, border space for each of the 10 machine-specific columns. Otherwise they'd take over the whole magazine and while that space we need to clear as much info as possible. Bigger print, fewer words.



## TEETHING TROUBLES

I have just bought an Amstrad PC 1640 to run my business but have not had much luck yet in actually getting the thing up and running.

The first thing I did when I arrived through the post from Baxhall, Mal Order was to check it and put it all together. But there's one cable I'm confused about. It has three coloured wires protruding from it - brown, blue and a steel B. Strips green and yellow one. I have tried plugging this into the disk drive cable because I had heard that pokers were important in computing. However, no nothing seems to have happened.

Since my business involves offering investment advice to persons I would be grateful for your help in some as possible.  
Dr Matthew Goldinger, Broadmoor

You've baffled us with that one. Our Perhaps one of our readers can help?

## PEN PALS

Hi I'm a 19-year-old Swedish girl just visiting England for 10 months. Computer studies course. I like to play games with my Amstrad and have access to a wide range of software. Play could you get me in contact with other UK people in this area to carry out computer tests.

Ingrid Svensson, Box 58, Sals

Nice photo, shame about the spelling.

## DISTURBED

Am I alone in being disturbed by the he Guit in your publication of the word programs. Start without its last two letters.

Prof. Anthony Archibald-Smythe, Oxford

Yes.

## WICKED

Hey! Your mag is WICKED. The reviews are mega-cool and the voucher scheme is brilliant. I've cancelled my subscription to the Babel so I can buy yours every week instead.

H S Licker, London

PS. Do I win this week's draw?

No.

## PATHERIC

You new rag is pathetic. Fancy having a computer magazine without any program listings. What are we supposed to do with it? Read it?

You must be joking.

Please cancel my subscription.

Adam Bonehead, Sudbury

What subscription?

## CONFUSED

I am very confused about graphics standards on the PC. Just what does all this stuff about VGA, CGA, and VGA actually mean? And why is it that some of the IBM compatible programs I buy for my IBM compatible never run?

Please run a feature on this topic as soon as possible.

A Sugar, Brentwood

Hours is just one of thousands of letters we've received recently, as this has just. By a remarkable coincidence we found the very feature you're looking for in this issue. Page 29.

## DISCOUNTING PRICES

I would just like to point out for a page or three of virtually illegible writing about the disgusting high price of games software. It's no wonder so many people pirate games when it costs over £20 just to get one crummy title and even more on the Amiga which my friend says so why don't the software houses do something about it before that's enough publishing - Ed.

Sperry Youth, Dorking

## HOW DARE YOU

How dare you publish a picture of a Spectrum when everyone knows the machine is a sorry mess? My Commodore 64 is far better, even if it's a pathetic and constant upgrade story run at the Spectra's speed. At least it has a decent sound chip and doesn't suffer from attribute clash and that's enough mudslinging - Ed.

Captain Zardos, Bognor Regis

## TECHNOLOGY CONVERT

Being totally unfamiliar with computers, I was with enormous frustration that, some years ago to the month, I bought my Amstrad PC1640 with a view to buying the unpublished novel I've been working on in my spare time over the last 23 years. Yet my fears proved totally unfounded. It took me only five weeks to understand the first three pages of the novel, and now I feel I've lost it in a disk and type in a paragraph have scratch totally blanked in my head that the time it took to take my secretary to finish off a complete chapter on her Remington portable.

Please find enclosed my history and the year interest the last 22 paragraphs of the novel, all of which - as you can see from the dirty scratch in the top of the page - have gradually been written out on the Amstrad PC1640 (except for paragraph 15 which I had to ask my secretary to retype on her Remington because it contained a spelling error). I am now a total convert to the new technology and can barely wait to begin logging out my local club's monthly newsletter using a Desk Top Publishing program I have recently installed and which I would like to ask the following 38 questions - I have included a stamped addressed envelope for your reply and that's enough agony - Ed.

Colin Hargreaves, Chesham

# IS ALAN SUGAR MAD?

What's going on at Amstrad? Is Alan Sugar mad?

Just look at the facts. In 1996 he wraps up rights to the Sinclair name and takes over manufacture of the best-selling Spectrums. His marketing people trumpet the fact that now Amstrad can use the Amstrad label for the more colourful, better business machines while the Sinclair label will do nicely to as a marketing angle for the thronging millions of youngsters from whom 'Sinclair' means 'game-playing computer'.

In 1997 he muddies the waters somewhat by bringing out the Sinclair Spectrum Plus 2 and Plus 3, neither of which manages to excite anyone particularly, although they can at least run Spectrum software.

But now in 1988 he goes and launches the 'Sinclair Professional', the so-called games machine that also has serious applications.

Games Machine? Goodwilling. This nasty little unit can only generate four colours. Four? That's 12 fewer than the Spectrum managed in 1982. And what colours are they? Well, one of them is black and frankly that shouldn't count as a colour

at all. And the other three are normally white - which also doesn't count - a nauseating light-blue so-called 'cyan' and an even more nauseating pinkish-so-called 'magenta'. Can't even play Pac-Man properly as that setup unless you want one of the ghosts the same colour as the player.

Even the sound is flatter than the classic Spectrum, being which at least had no preferences. Frankly any existing Sinclair owner who thinks he's upgrading by buying that thing is in for a nasty shock.

C Seder, Cambridge

Perhaps Mr Sugar has concluded. So dear owners of all are now looking ill so much more in a computer than just play games. Perhaps he thinks many of them are now on the lookout for an inferior-range PC, so why not offer them one bearing the Sinclair name they love so well. There again, perhaps he is mad.



## Now it's your turn

Yes, we add it. These letters are all made for the fun of it, after all, aren't they?

Now it's your turn to get your name in the spotlight by giving us your story or anything else you want to say to the world of computing. Write to: Computer Express, 4 Queen's Rd, Bath, Avon BA1 1EJ.

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- Slot for half-length expansion card.
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- Available with mono (hercules) graphics monitor for £399 +VAT.

Schneider are also distributing the 'Tower AT' range which consists of 14 models ranging in price from a remarkable £799 to £1999 +VAT.

# The Schneider gambit

Peter Worlock, master of the PC clone, assesses the (very) aggressively-priced Euro PC.

The day of the PC compatible as home computer has been a long time coming but its here with a vengeance now. Based on the levels of Amstrad's Sinclair Professional comes the Euro PC from German manufacturer Schneider - former friends and partners now in head to head competition.

You can't get the price of a PC down to home computing levels without cutting a few corners in the process. So the question is, what exactly are you getting for your money?

### Smart, modern appearance

Physically, the computer itself is a single unit, rather like an overweight PC 89/90/10, and includes a more or less standard keyboard but with twelve function keys (rather than the usual ten). These are arranged horizontally across the top rather than in the more common vertical position on the left.

The most noticeable difference is the wide extension on the right which houses a single 3.5 inch floppy disk drive offering 750K of storage. This faces forward, a better arrangement than the right hand side option used by both the Amstrad 890 and Commodore Amiga 650.

At the rear of the keyboard is a comprehensive collection of expansion ports, providing interfaces for parallel printer, RS232C serial for modem or printer, an external floppy disk drive, an external hard disk, and a mouse/joystick port. Sadly no mouse is supplied with the machine.

The whole unit is styled in an off-white plastic with a moulded rear edge diagonally slanted for ventilation giving the Euro PC a very smart modern appearance. If the competition between it and the Sinclair Pro was a beauty contest the Euro PC would win hands down.

### Very nippy

Documentation is comprehensive and - unusually - well done. The

introduction to the hardware is clearly written, with the welcome addition of complete pin out diagrams for all the interfaces. The MS DOS and GW-Basic manuals are standard Microsoft but even these appear to have been specially typeset for Schneider and are much better than some I've seen.

Inside the machine (not that you're ever likely to see it) the main processor is an 8088 clocked at 4.77MHz, 7.16MHz and 9.54MHz and the speed can be changed from the keyboard. This makes it very nippy at the top rate, but gives you the option of slowing down games and other speed intensive software.

Graphics are handled by a custom video adaptor built in to the PC and offering either Hercules compatible monochrome or CGA displays. The latter provides 16-colour text and four colour graphics modes, but text can be difficult to read over long periods. The Euro PC comes with either black or colour monitor and the review machine was supplied with a 14 inch CGA unit that provided a sharp, bright, rock steady display. (The down side is that you need a Euro PC without memory, so if you buy an VGA display you'll have one more monitor than you need or want.)

### Expansion problems

The Euro PC comes with 512K of main memory which is best described as adequate. Most PCs take up to 640K or 1Mb on the motherboard but because the Schneider is a closed box that isn't an option here. If you want more memory you have to use an expansion card - and this is where the aforementioned shortcomings come into play.

The single greatest benefit of the PC standard is its expandability, and most PCs offer anything from three to five slots for expansion cards. However, these made take up a great deal of space - and were obviously the first thing to go in the Schneider

design. What you're left with is a single slot for a PC half length card. Schneider has accommodated the

## Give it the Works

Bundled software tends to have a poor reputation, often consisting of a tag bag of very old or second rate programs the one handy worth for price of the disks they're held in. With Microsoft Works however, Schneider has done buyers a real favour.

Works is a powerful integrated package offering word processing, database, spreadsheet and graphics and communications all in one. Each module is a full featured application in its own right, but you can mix and match data from each it means that once you've added a printer to your Euro PC you can immediately get down to some serious computing.

And since Works normally sells for more than £150, it makes the Schneider look like particularly good value.

In elegant fashion, a section of the case on the left side slides out revealing a standard card connector. Your card is easily slipped into place lying flat and horizontally across the case. The case section slides back into position, leaving the output ports from the card visible from the rear of the PC. This leaves Amstrad's solution for the PC200 looking like a badge (because although the Sinclair takes two cards, you have to permanently remove the top of the case and have your cards sticking out where they are exposed to dust, prying fingers and suction impact from any stray object).

The single slot limitation is really the key to working with the Euro PC. On the one hand, Schneider has obviously provided more of the things you'd normally use a slot for: mouse port, and serial and parallel interfaces. On the other hand, the slot is too small to take a hard disk card. You'll really have to think about what

that slot goes used for. If you add an VGA graphics adapter (highly attractive) you can expand the memory. And so on.

And when the slot is filled, all further expansion has to be external. A fully expanded Euro PC promises to be a thing of supreme ugliness. And even the largest expense of executive elegance will vanish under the PC's monitor, a floppy drive, a hard drive, a modem, a printer, a scanner and all the associated cabling.

### Express Verdict

First there's the question of whether you want a PC compatible at all. If you want instant playing arcade games, or dabbling in computer graphics, you'd be far better choosing an Amstrad or ST. The Schneider is fitted at these with a more serious use in mind (although there is the growing range of PC games as an added bonus).

As a simple PC compatible the Euro PC has a lot going for it. At £399 for the mono version and £599 for the colour, it's fast, it looks good and it gives you access to the enormous range of PC software. If you ambledon for the machine are low there's not much to criticize. And the bundled copy of Microsoft

Works is a definite plus. However, if you think you'll eventually want more from the machine, there are real problems. The lack of expansion slots, and the need to have lots of peripherals cluttering up your desk, make it much less attractive than a traditional PC compatible like the Amstrad PC2085, PC1640, or any of the dozens of other sub £1,000 systems available.

## HIGHLIGHTS

- Free copy of Microsoft Works
- Fast, reasonably powerful 8088 level system
- Easy to set up and use
- Attractive design

## DRAWBACKS

- Severely limited internal expansion

# Lombard



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# WHERE NEXT?

*Express talks in depth to the people who control what computing will be like in five years' time.*

As 1988 draws to a close, the world of personal computing gives every impression of surging vitality.

- ◆ More people are buying computers than ever before.
- ◆ A wider variety of tasks is being entrusted to computers by a wider variety of users.
- ◆ Most areas of the market are reporting growth, excitement and a constant flow of remarkable new products.
- ◆ The terrifying plunge of 1984-5 which saw literally hundreds of computer-related companies go bankrupt has been all but forgotten.

But where is it all heading? Will the machines around today still be making the grade next year? In five years' time?

Are games consoles about to take the UK leisure industry apart?

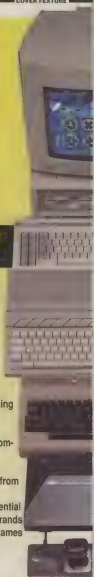
Will IBM's PC standards further strengthen their stranglehold in serious computing?

Can 8-bit computers survive another 12 months?

And what about Atari and Commodore's 16-bit machines? Will they move from strength to strength or be swallowed by the all-conquering PCs?

We spoke in depth to seven of the UK computer industry's most influential people who offered intriguing, detailed predictions of where the four main strands of personal computing – PCs, other 16-bit machines, 8-bit machines and games consoles – are headed: .

Now you too can gaze into the future. 



## Sector 1. PCs - Will the mono-lith fragment?

**DEFINITION:** Any machine compatible with the personal computers produced by IBM.

**EXAMPLES:** Amstrad 1512, 1640 (pictured), and 2000 ranges, Sinclair PC200, plus numerous machines from Tandem, Compaq, etc.

**FACT:** PCs have massive domination in the business market worldwide. In the United States they are also the leading leisure machines (excluding consoles).

**QUESTION:** How will PCs develop in the UK over the next five years?

"The PCs dominate in the UK business market partly by default. The Mac has not been sold well over here, with Apple going for small numbers and high prices. But the domination will not continue: there'll be an increasingly steady battle with the non-PCs making a strong impact at the lower level."

"PCs suffer greatly from what I'd call software drag. Companies can afford to freeze them out, and so the technological generations take much longer than in the games market. If you can't provide innovations, you can have progress at a terrific rate. That's why home machines will become so much more powerful than small business micros, where they are constrained to continuity, software portability and all that crap. IBM are having an awful time trying to persuade people that DOS was

last year's thing. They've still got mainframes in place that people have been using since the 1950s."

"PCs will also be eroded by the splintering of the market - that if people want say DTP, they'll choose the Mac; for music, the ST; and for graphics the Amiga. In any case in the future, the PC sector will not be as homogeneous. It'll actually break in half with the cheap DOS machines at the bottom. This box will split a further four ways: SuperDOS - the Diskless Windows 386 area, OS/2 - simply because IBM and Microsoft are behind it, it'll make some impact (even though it shouldn't); Unix - because it clearly has a lot of advantages; and then the new level of Macintosh."

"At the lower end, the PC200 is mediocre at best and the CGA graphics are just

## Sector 2. 16-bit - Leisure takeover?

**DEFINITION:** A range of second-generation computers with very fast and powerful central processors.

**EXAMPLES:** Atari ST, Commodore Amiga.

**FACT:** STs have to date substantially outsold Amigas in the UK (perhaps 130,000 units to 60,000). But in most of Europe and America, the Amiga is the big winner.

**QUESTION:** Which machine will win long term? And how bright a future does either have?

"People are still finding ways to utilise today's generation 3rd machines like the ST and Amiga. There's still a lot of life left with an expanding software base. They'll still be there in three years. In two years something new will come along but it will need to wait five years for an established software base - which is the Waterloo of hardware."

"In three years, time there should be a crossover point where RISC, parallel processing or 32-bit will become state of the art volume products."

"Much depends on the future cost of computer memory. The ST uses a 16-bit micro processor and to be effective it needs 512K of memory. To have a 32-bit micro you need to double or quadruple that. At today's memory chip costs, that would have a dramatic effect on its final price. But if semiconductor supply meets demand and prices come down, people will get more power for their money."

Bob Gleadow

"Victory for either Commodore or Atari is both unlikely and unimportant. The competition between them matters more. It will do better and more interesting things with their machines. If one wins, it'll be a disaster. Just look at how boring the education market became once the BBC took over."

"And it doesn't matter as much as people think that the ST and Amiga haven't done well in the States. In the old days the States used to account for 80 per cent of the computer market. Now it's less than half and declining. The days when if you didn't make it in the States it was a matter of great concern have gone for good."

"As for Amstrad, I wouldn't be in the least bit surprised if they produce the definitive 68000 based machine which gives 15 minutes and a few weeks could run both ST and Amiga software."

Jack Schofield

"Only Archon were cheaper, it could really

## Sector 3. 8-bit - Dead or alive?

**DEFINITION:** The original generation of home computers - relatively simple central processors and limited memory.

**EXAMPLES:** Sinclair Spectrum, Commodore 64 (pictured), Amstrad CPC.

**FACT:** Despite all the talk of 16-bit, the UK leisure computing market remains heavily dominated by the 8-bit machines (around 75% by value).

"The Spectrum and 64 are quite respectable games machines, even after all this time. They're as good as the NES or Sega and they'll still do OK once their prices drop down below £100. But they're tape based - and all tape machines will die by next Christmas."

Jeff Minter

"Look at the 84. There's a machine that could've been done two or three years

ago. But we expect to sell 120,000 this year in the UK alone. That just shows you 8-bit is going to continue for some time because the software base is already there."

Steve Franklin, Commodore UK boss

"The 8-bit machines have been caught badly between games machines which are becoming more powerful and the 16-bit machines which offer you business stan-

## Sector 4. Consoles: Primed for explosion?

**DEFINITION:** A computer without a keyboard, marketed as a game machine.

**EXAMPLES:** Nintendo, Sega (pictured).

**FACT:** The latest profits recorded by Nintendo exceeded the combined worldwide sales of all leisure software publishers.

**QUESTION:** Having conquered America and Japan, will Nintendo (and other consoles) now take over in the UK?

"People have finally become aware and accept that the chief use of computers in the home is to play games. The hope to program has now gone, hence the rise of consoles."

"Come the mid-1990s there will be a new super-chip at hand, all dancing consoles linked with CD so that you can hear real life videos. I also suspect that there'll be an increasing range of related peripherals, such as high definition TV screens and a merging of the academies - sit, scroll and move that will take you closer to a more

complete entertainment experience."

Nick Alexander

"There's been talk of consoles becoming predominant for some time but nothing's happened. I think people want a home computer as a concept. People say look at the US but they have more spending power than us. Father has his Apple and the kids have a console. But that won't happen in the UK."

Steve Franklin

appealing for gamers. To the argument it may be rubbish but look at all the software, I have to say 1. It is rubbish 2. No, there aren't so many games and 3. If you stand it side by side with an Amiga or ST, you'd have to be a real idiot to buy the PC 200. The machine lies in the face of my theory of nichelessness - that people are now using different computers for very different tasks, rather than using one machine for everything."

**Jack Schofield, Computer Guardian editor**

"We've had more than enough technological innovation. Even so, it will continue in the same vein. PCs will be sold cheap, but will do with cheap take it or leave it software. Of the shelves Tesco's stuff - you only

have to look at the States to see what will happen here."

"The most progress will be with laser printers. Everyone will have one and the dot matrix brigade will quietly disappear. The communications side will inevitably come up. But people still haven't digested the systems and software that they have now."

**William Poel, business market pundit**

"PCs are maturing into Macintoshes." **Jeff Minter, cult programmer**

"Next year 80286 will be the volume seller. In two years, 80386 will be the volume seller. Don't forget that MS-DOS already has five years of power upgrades."

**Bob Gleadow, Atari UK boss**



● Gleadow: Speaking volumes

TC games are definitely a poor, but not necessarily via the PC 200. It's in a very cluttered market and essentially the games arena comes not from kids but from businessmen. That makes it a much older, much different market. It also means that the PC won't become the dominant games medium over here."

**Nick Alexander, Virgin/Mastertronic boss**

score. A cut-down version at £250-300 - but no, we're talking about Acorn."

**Jeff Minter**

"The attitude now is very much concentrated on graphics and images and visuals and less on gameplay. I would imagine that people will be more interested in having fun. For now though the market is played by plagiarists. Once someone has a good idea they'll get copied."

"Console games are very boring when viewed from the outside. They're very dry when compared with Top of the Pops. It will have some of the spotty led in its bed room about it. I think in the next four years it will become more socially acceptable - probably through more powerful machines."

"But people simply haven't explored 16-bit machines at all. There is a preponderance of 8-bit conversions and the only advancements have been Starflight 2 and File Games (a game) which is simplistic. Games like Career Command could easily



● Braben: Piqued by plagiarism

have been written in 16-bit."

"The turning point will come when the quality of software isn't dictated by hardware restrictions but by creativity. Then it will be fun."

**David Braben, state of the art programmer**

"One mistake that is often made about 16-bit is that it is viewed as new. The Spectrum and 64 are ten years old, but the ST and Amiga have been around for two, maybe three years already."

"By the 90s we'll be talking about 32-bit processors and 32-bit games, which will be highly challenging for the software producers. Currently we seem to spend at least half our time trying to condense down what's been written into what's available, if there's a larger memory sure then it won't mean that our costs will have to expand enormously to provide the software to run on it."

"In any case it's much better to use only

half the power of a Transputer and produce something at a price that everybody can afford, than a fully technology-driven product that no one can buy."

**Nick Alexander**

"It'd be very surprised if there aren't as to three quarters of a million Amigas in the UK by 1992. We expect to sell 50,000 this year. People are becoming more attracted to 16-bit machines and they're being used by young people who've never had a computer before. They appeal to a whole spectrum of age groups as well as the young not only because they're sexy machines with good graphics."

**Steve Franklin**



● Alexander: A long, slow decline

and facilities. They'll be squeezed next year. The Spectrum has traditionally sold the 64 here and it will be supported longer."

**Bob Gleadow**

"The Spectrum hasn't changed that much but its audience has grown younger. When

it first came out there were quite serious people who were convinced that they could run their payroll packages on it. It wasn't just a games machine. Now I receive it appeals to the 8-11 year old band, with the 64 reaching the 11-15 year olds. But though the 64 is a more sophisticated machine, it has never gone anywhere. It's still the same machine as it ever was."

**Jack Schofield**

"We're not seeing any dramatic drop off, but rather a long slow decline with a greater proportion of budget title sales. I don't think there are any real indications of the Spectrum or the 64 now appealing to a younger market. Possibly that will change in 18 months time if and when Amstrad brings out a 2.59 version of the Spectrum."

**Nick Alexander**



● Franklin: Console? What console?

"There are 32 million consoles worldwide and I wouldn't like to guess how many there will be in five years. People are going to have dedicated machines for dedicated tasks and they're not going to use the keyboard computer for everything just to justify the investment. They will use computers for legitimate computing purposes and consoles for gaming."

**Mike Wernemann, Nintendo UK director**

"The problem faced by Korea reported to be entering the console market is that British programmers are not as good as the Japanese. In Korea get that right then I know they'll do really well because they've got a better machine. Nintendo will come through when they actually get round to releasing their vast library of software. But the one to watch out for is the PC Engine. It's absolutely outrageously good and at £100 it should wipe the floor."

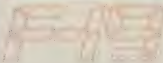
"Consoles are a good entry level for some people. But there are enough who'd

just be bored shitless who I want to get on and do something with their machines."

**Jeff Minter**

"There are more and more kinds of machines for more and more niches. That doesn't mean that something like consoles are going to take over or replace home micros, but rather that the market will become increasingly diverse."

**Jack Schofield**



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# Commodore's Christmas Extravaganza

**RIK HAYNES previews the 12th official Commodore Show**

The Commodore Show is back at its favourite venue later this month, boasting over 75 exhibitors and an exciting batch of new hardware and software. Coming just 30 shopping days before Christmas, it looks like an ideal opportunity to taw! for bargain presents.

If only the organisers would supply visitors with a Computer Show Recovery Pack - consisting of foot plasters, jostler's elbow soothing cream, aspirin (large bottle) and a four-ton truck to transport home all the leaflets, carrier bags and brochures collected during the day.



Commodore will parade its obligatory procession of between stars (Adrian Firth and Aelia Dinos) from the latest West End musical (Budge among others) as well as its range of Commodore products. As usual, parts of place will be given to the Amiga, with a Christmas Wasteland and Music Room (complete with audio experts) displaying the Amiga's audio-visual capabilities. Another new feature will be the Xmas Card Design Contest (using Amiga) with a daily prize awarded to the best entry. **Stand 44**

The Independent Commodore Product Users Group (ICPUG), in conjunction with Commodore, is celebrating ICPU's tenth anniversary by presenting a series of seminars. Topics covered include: MIDI For Beginners; How To Get The Best Out Of A Database and Programming In COMAL. ICPUG will also host regular question and answer sessions on various subjects across the entire Commodore range. **Stand 102**

Microdeal is using the show to launch several new Amiga games: Turbo-Trax (space-racing simulation), Frigate Night - The Arcade Game (based on the horror novel) and International Soccer (no prizes for guessing). Microdeal will also have an wide range of other Amiga titles (and latest additions to its reputation: computer accessories) available for sale. Visitors to the Microdeal stand will also have the opportunity to talk to Steve Bok, programmer of some popular Amiga games such as Goldstrider, Losttreasures and Return To Demios, now working at Microdeal's Frigate Night games. **Stand 2**

Heath is due to launch its new Beam compiler for the Amiga which fully supports the Amiga's library system and works within the Amiga's multi-tasking environment. Heath will also have Demopix II (full review in this issue), the new version of its popular assembler package for the Amiga. As an added bonus Heath will be offering

older versions of Demopix at 'very special prices' according to Heath's managing director David Lee. **Stand 68**

Anco has a new selection of Amiga software on sale at the show. Move Test and Move Run Book reviewed in this issue, Recovery (platform game) and Maths (based on the classic arcade game Clari Monitor on the C64) should also be available. **Stand 156**

Precision Software is presenting Superbase Personal II, the latest development in its range of Amiga database software (enhancements to its predecessor include built-in view editor and communications software). Precision is also launching three new Amiga products: Superplan (spreadsheet with Superbase-compatible data files), Professional Accounting Sequence Editor (personal DTP-compatible personal desk) and Chrono 5 (game testing strategy and shoot-out). **Stand 34**

The UK Amiga User Group will provide visitors with technical help and advice and will be offering special show discounts to prospective members. **Stand 87**

Trilogic will be selling its new Amiga sound sampler to the public for the first time. The appropriately named Amiga Audio Designer is said to let the user create 30 distinct, in musical equipment but doesn't come with any software. The delivery can be forgiven being so rapid the very competitive £26.95 price tag (with an extra £2.95 needed for A1200 users). Fortunately AAD is compatible with many existing commercial and public domain music software such as Amiga AudioMaster, Enderb's Popcorn and Datal Prospector. **Stand 157**

HB Marketing is presenting two new Amiga products: the multi-orientated ComaScore (novel DTP package) and Design 3D (CAD program). **Stand 57**

Sensible Software - a programming team making its show debut - will launch a new C64 50000 package called by Micropro. Also for sale (at ludicrously cheap prices) will be Sensible's old C64 titles such as Whodunnit, Picnic (both published by Dennis) and The Shootout Construction Kit (published by Outline). The word and wacky title of Sensible (Chris Yates, John Hale and Martin Galloway) will also be introducing a new feature to the show - very, very loud music - provided by a myriad of sound equipment. **Stand 120**

Arnor will be launching the Amiga version of its popular word-processor, Proton. The PC version has been taking the market by storm and Arnor's sales manager Douglas Thompson, the Amiga version has been under development for over two years now and we believe it to be the best Amiga word-processor available. **Stand 132**

## SHOW FACTS

### WHERE

The Novotel (Champs-Élysées Gate and Fables Gate), Courcelles, London W8

### WHEN

Friday, November 18 - Sunday, November 20, 10am-6pm (open until)

### HOW MUCH

£5 adults, £3.50 under-16s

### TRAVEL

Novotel underground in Hammersmith (Piccadilly Metropolitan and District Lines)

### ORGANISER

Database Exhibitions (Tel 0935 578888)

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Amstrad PC1512 dual drive	499	639	N/A
Amstrad PC1512 20Mb hard disk	643	760	N/A
Amstrad PC1512 30Mb hard disk	699	799	N/A
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(New) Amstrad PC2086 20Mb hard disk 12" monitor	950	1099	1159
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Opus PC4 20Mb hard disk	N/A	N/A	989
*Packard Bell Vx38 single drive	540	600	850
*Packard Bell Vx38 20Mb hard disk	745	830	1100
*SBC PC single dual	533	594	788
*SBC PC dual drive	600	750	850
*SBC PC 30Mb hard disk	899	1029	1139
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*SBC AT 286/10 Mhz 40Mb hard disk	1450	1649	1740
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*SBC AT 286/12 Mhz. As above with 20Mb hard disk	1800	1800	2010
*SBC AT 286/12 Mhz. As above with 40Mb hard disk	1866	2046	2166
Walters AT 286/10 Mhz single drive	676	1153	1381
Walters AT 286/10 Mhz dual drive	1070	1260	1515
Walters AT 286/10 Mhz 20Mb hard disk	1383	1610	1869
Walters AT 286/10 Mhz 40Mb hard disk	1600	1897	2084

## IBM PC/AT 80386 COMPATIBLE

Akhter 386/20 Mhz 40Mb hard disk	2840	3125	3275
(New) Amstrad PC2386 20 Mhz 45Mb hard disk 12" monitor	2599	N/A	2799
(New) Amstrad PC2386 20Mhz 65 Mb hard disk 14" monitor	N/A	2699	2899
AMT 386/32 Mhz 40Mb hard disk	3296	N/A	3596
Barbaten 386/20 Mhz 40Mb hard disk	2625	2840	2895
Barbaten 386/24 Mhz 40Mb hard disk	3049	3234	3375
Commodore 386/16 Mhz 40Mb hard disk	3529	3783	3899
Commodore 386/16 Mhz 80Mb hard disk	4499	4678	4953
*SBC 386/16 Mhz dual drive	2496	2796	2895
*SBC 386/16 Mhz 20Mb hard disk	2896	3100	3250
*SBC 386/16 Mhz 40Mb hard disk	2960	3090	3300
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Walters 386/16 Mhz 20Mb hard disk	2705	2882	3120
Walters 386/16 Mhz 40Mb hard disk	2861	2999	3259
Walters 386/20 Mhz single drive	2900	3050	3350
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PC1640 HD30	750.00	879.00	999.00
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BARBATON PC20	899.00	1049.20	1231.20
BARBATON PC40	1050.00	1200.00	1382.00
SBC DFS SD	460.00	N/A	600.00
SBC FD DD	550.00	750.00	899.00
SBC HD30	900.00	1050.00	1149.50
AMT PC 30 HD	999.00	N/A	1305.30
OPUS PC II SD	529.00	N/A	819.00
OPUS PC II DD	699.00	N/A	950.00
OPUS PC II 30HD	950.00	N/A	1296.00
OPUS PC IV 20HD	N/A	N/A	980.00
EPSON PC 20MB HD	989.00	N/A	1530.00

<b>PC/AT (80286)</b>			
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BARBATON AT20	1276.00	1426.20	1608.20
BARBATON AT40	1427.50	1577.00	1759.00
SBC 286 AT SD	900.00	1050.00	1299.04
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SBC 286 20 HD	1250.00	1400.00	1600.00
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# Devpac 2

Assembler/Debugger System

Amiga ● £59.95/dk

Also on ST ● £59.95/dk

Hiscof ● The Old School, Greenfield, Bedford MK45 5DE. Tel: (0525) 718181

Amiga owners now have the chance to sample the new voice of the assembler – already highly regarded by ST users – from the market leader in home computer assembly language packages.

Devpac2 is a 68000 assembly language development system for the Commodore Amiga which comprises macro-assembler, text editor, debugger, linker and operating system 'include' files. The package consists of two disks containing the necessary programs and a 167 page manual.

## User Interface

Devpac2 allows you to write, run and debug machine code programs. This process can naturally be divided into four stages: source code editing, program assembling, program execution and program debugging. With its predecessor these stages were loaded into memory separately – leaving valuable development time – but now these tasks are memory resident, saving time considerably.

## Is it for you?

This is how we think different levels of user will react to the program.

### ● Beginner

Devpac2 is not designed to be a tutorial to assembly language programming, so if you have no previous programming knowledge, learning 68000 language may prove too daunting a task – especially with the Amiga's audio-visual processors to cope with as well. Perhaps you should start by learning to program a high-level language such as Amiga Basic.

### ● Intermediate

Devpac2 provides the perfect upgrade to users of Amiga Basic, C or other Amiga assemblers. In fact users of C will be able to link and debug their old programs using Basic and Monom – thus enjoying the best of both worlds.

### ● Advanced

Devpac2 is the only real choice for the advanced assembler programmer and even includes a pocket guide to the 68000 instruction set for quick reference. All the include files are available, and the improved features of Monom really help at the crucial debugging stage.

The editor, assembler and debugger are easily mastered, extremely efficient and support a wide range of options.

## Features

What made the original version of Devpac so successful were an excellent text editor, fast macro

assembler and useful range of debugging tools. These features have been improved to four main ways:

- Editor, assembler and debugger are now fully integrated.
- Uses ARP (AmigaDOS Replacement Project) File Recompiler.
- Maximum assembly time has doubled to 75,000 lines per minute (average time being 35,000 lines per minute).
- Numerous changes to the debugger such as improved user interface, multi-window display and stand-alone or assembler-resident operation.

## HIGHLIGHTS

- Integrated full-screen text editor, macro assembler and multi-window debugger.
- Optional stand-alone version of the assembler.
- Memory resident assembly, program execution and debugging.

## DRAWBACKS

- Manual lacks index and glossary.
- Single-drive users may find the include files take up too much disk space.

## Documentation

The manual covers everything from making a backup of the disks to giving advice on the best Amiga technical books, and makes you trust the package's features in a steady and easy to understand way. For advanced users there are various reference sections – presenting technical information in a clear and concise way.

## Verdict

An almost essential purchase for the serious intermediate to advanced assembly language programmer.

★★★★★

# Replay 4

Atari ST ● £79.95/dk

Microdeal ● Box 68, St Austell, Cornwall, PL25 4YB (0726 68020)

There seems no end to the list of sound samplers currently available for the ST. Now, indeed, is the time for forthcoming samplers. While Replay isn't new, the 4 is. The 4 referring to the software version.

## So what's improved?

The new package has a wide range of improvements: MIDI facilities allow up to 10 samples individually assigned to different MIDI keys, real-time pitch shift (bend) and much better effects (echo, reverb and so on) control.

The Replay 4 package also includes the Drumbeat sample sequencing software. This lets you store 16 samples in memory and replay them three at a time (three-channel polyphony). Up to 99 drum patterns can be stored in memory at once along with 70 song entries.

And are the major additions to the Replay digitising software:

- Maximum sampling rate 50kHz
- Adjustable sample-input triggering
- Low-pass software filtering (low frequencies pass unaltered while higher frequencies are chopped) on samples held in memory
- Real-time oscilloscope to monitor incoming sound
- Real-time spectrum analyser
- Ten samples can be held in memory
- Selectable waveform display



son.

Replay 4 grabs sounds from powered sources (like a sampled noises from CD, record tape and so on) and converts what it hears to digital equivalents. Digital sounds are stored in the computer's memory as numbers. Because numbers are what the computer understands best, almost any operation can be performed on these values.

## User interface

Functions are selected by clicking on pretty icons or by clicking on items in drop down menus. It's a vast improvement over the old version, much easier to use and more logical. The manual is almost unnecessary.

## Range of features

Two phone sockets exist on the Replay board which slot into the ST's cartridge port. One socket

is for input, the other for output. Sampling rates are fixed – 5, 7.5, 10, 15, 20, 30, 40 and 50kHz. All frequencies, except the highest two, can be sampled through the computer's analogue. You'll need to hook Replay to an amp and speakers if you want to hear the highest playback frequencies. Filtering facilities include reverse, fade in/out, range, filter, copy, cut and paste.

## Documentation

Contents page, properly defined sections and even an index – a luxury indeed. Many hardware peripherals offer little more than a photocopy sheet. The only thing missing a picture to accompany the explanatory text.

## Verdict

There's excellent provision for programmers wishing to incorporate samples into their programs, with source files in assembler and examples in all major versions of BASIC.

A complete sampling and MIDI outfit, added into one good value compacted to save

for offstage. The software works efficiently and only lacks compression and audio monitoring facilities.

★★★★★

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# WHY won't this (%x\$! program run?!

The earliest personal computers, from the ZX81 onwards, used the easiest possible method of generating a screen display: a single video chip driving a domestic TV set. For many years that set-up was sufficient.

However, as users demanded increased resolution, a greater range of colours and better image definition, display adaptors became more complex and the TV set became inadequate. Today's systems, typified by the Atari ST and Commodore Amiga, generate high-resolution, multi-colour graphics requiring dedicated video monitors to display the resulting images.

But from the user's point of view, even these systems are fairly simple to use: you simply buy the appropriate monitor for your machine. For users of IBM PCs and compatibles, however, things aren't that simple.

When IBM launched the PC in 1981, the basic system had no display adaptor at all, although two plug-in video cards were available as 'optional' extras: the Mono Display Adapter (MDA), and the Color Graphics Adapter (CGA). As the name suggests, the former displayed a monochrome picture, but it was also a text-only adaptor. The CGA was IBM's first attempt at meeting demand for graphics and colour.

However, these features were achieved only at the expense of text displays, and CGA is far from ideal for text-based applications. This led to a third attempt, the Enhanced Graphics Adapter (EGA).

With the introduction of last year's PS/2 systems, IBM moved on. The low-level modes in the range, the Models 25 and 30, use a system called the Multi-Color Graphics Array (MCGA), while the 'true' PS/2 machines use the now standard, the Video Graphics Array (VGA).

The MDA, CGA and EGA adaptors are all

available as plug-in cards, and with genuine IBM PCs you must buy one before the system is usable. However, most clone manufacturers equip their machines with one or more adaptors as standard, and with the PS/2 machines IBM now builds the display adaptors into the basic hardware.

The picture is further complicated by display adaptors from third-party manufacturers. Many of these have dedicated applications in computer-aided design and desktop publishing, for example, but some, like the adapters from Hercules, have become

Because it uses a graphics standard that's incompatible with your PC. There are more than SIX such standards, so it's no wonder PC users tear their hair out. To ease the pain PETER WORLOCK, himself still surprisingly hairy, gives you this complete guide.

alternatives to IBM's standards.

The end-result of this confusion means good news, and bad, for PC owners. The good news is that, unlike Amiga owners, for example, you're not stuck with one graphics system. If you need more resolution, or more colours, you can simply buy a more powerful plug-in-and-go adaptor.

The bad news is that not all software is compatible with all adaptors, and that as the adaptors become more powerful, you need to buy more powerful, and more expensive, monitors.

## PC Display Standards: the breakdown

	MDA	CGA	EGA	VGA	Hercules
<b>TECH SPECS</b>					
Text modes	1	2	2	3	1
Graphic modes	-	2	6	9	1
Text colours	2	16	16	16	2
Graphic colours	-	4	16	256	2
Pixel size	-	16	64	252,800	-
Max resolution	80 x 25	640 x 200	640 x 350	640 x 480	720 x 240
<b>SUITABILITY FOR APPLICATIONS</b>					
Word processing	●●●●	●●	●●●●	●●●●	●●●●
Business	●●	●●	●●●●	●●●●	●●●●
Games	●	●●●●	●●●●	●●●●	●
DTF	●	●●	●●●●	●●●●	●●●●
CAD	-	●●●	●●●●	●●●●	●●●●
<b>RANGE OF SOFTWARE AVAILABLE</b>					
Word processing	●●●●	●●●●	●●●●	●●●●	●●●●
Business	●●	●●●●	●●●●	●●●●	●●●●
Games	-	●●●●	●●●●	●	●
DTF	●	●●●	●●●●	●●●●	●●●●
CAD	-	●●●	●●●●	●●●●	●●●●

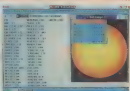
## The three most common standards



● MDA - shows various four colours



● CGA - that's more like it, 16 colours on-screen



● VGA - the ultimate colour graphics - some 300,000 pixels!

## MDA: Mono Display Adaptor

The MDA is the simplest display adaptor and so limited that it is virtually unavailable today. Producing 80 x 25 character text displays in two colours, it does provide highly readable text but no graphics.

## CGA: Colour Graphics Adaptor

The CGA represents a minimal improvement. Its 80 x 25 text display can use 16 pre-set colours, but the smaller character matrix results in a loss of definition that makes text displays very tiring on the eyes over long periods. Definitely not recommended for word processing or spreadsheet work.

The CGA provides two graphics modes. A 640 x 300 display in black & white only, and a 320 x 200 mode with four colours. Unfortunately, colour selection is limited to a choice between two colour palettes: green/red/brown/one other, or white/light blue/purple/one other. In each case, the 'other' colour can be one of the 16 text-mode shades.

## EGA: Enhanced Graphics Adaptor

With the EGA, IBM got it right. To start with, the EGA can emulate both MDA and CGA adaptors, so software written for those will run perfectly but it also does things neither of its predecessors can do. Resolution is 640 x 350, and it can display 16 colours from a palette of 64, even in its highest resolution graphics mode.

This means that text displays are highly readable, but quality graphic images can also be generated.

## MCGA: Multi-col. Graphics Array

The adaptor used in the PS/2 Models 25 and 30 is a logical development of its predecessors. Resolution has again been stepped up, to 640 x 480 pixels, and much more powerful colour facilities are provided. The MCGA uses analog RGB to display up to 256 colours at once, from a total palette of 262,144 shades, which puts even the Amiga in the shadows.

## VGA: Video Graphics Array

Essentially, MCGA is a sub-set of the VGA standard which in turn is a sort of 'enhanced' EGA, so that many programs written for EGA will run unmodified on a VGA system. However, the VGA offers many extra modes, including 720 x 400 text modes, 640 x 480 graphics modes, and the same colour system as the MCGA.

A range of VGA adaptors are now available which means that even a humble £500 PC clone is capable of producing very high quality displays unrivalled by any other machine (with the exception of a £10,000 Macintosh II), provided it is equipped with the right monitor.

## Hercules

Manufacturer Hercules came up with its own solution to the problems set by the MDA. The Hercules card is a mono adaptor capable of producing high-quality text displays and high resolution graphics. For many applications, the lack of colour is not a problem, so the Hercules card has

become a popular alternative to IBM's own display adaptors. This popularity at turn has meant that many software publishers have supported the Hercules card, establishing it as a standard in its own right.

Further developments include the HGC+, which provides for customised fonts - quicker and more economical on RAM than graphics-generated fonts; the Hercules Color Card which is effectively a CGA card, and the Hercules InColor Card which is an EGA version of the mono card.

## Others

Several third-party manufacturers offer graphics adaptors that exceed even VGA in screen resolution and available colours. For example, card maker Oenosa has a SuperV-

GA card with resolution up to 1024 x 768 in 16 colours, and 800 x 600 in 256 colours.

Often, these super graphics cards have such unusual displays that manufacturers bundle them with special monitors. NEC, for example, has the MonoGraph system, featuring 1024 x 1024 graphics, bundled with a paper-white monitor specifically for desktop publishing applications.

The problem with these systems is software compatibility. Generally, the manufacturer will have to convince software publishers to include support for these odd graphics modes, and few publishers are willing. Therefore, you must check that the software you regularly use will be compatible with your would-be graphics system. ■

## How to get kitted out

When you buy a PC, you should make sure you get the display mode most suitable for your needs. Most manufacturers (Amstrad has been a key exception - see below) allow you to 'mix and match'.

For example, if you buy a low-cost PC clone you could ask

your dealer to fit it either with a CGA card costing £50-100 (many such cards now also include Hercules and MDA throw-in), or with an EGA card (which may again include less powerful standards) for £30-150.

You could even opt for a VGA

card at £200-250. Although there is little point in putting such sophisticated graphics into a £300 PC - it would lack the processing power to run VGA at an acceptable speed.

If you are kitted out with more than one graphics standard, you can use MS-DOS to switch between them, although you will need to have a suitable monitor connected for the one you are running.

## The monitor problem

The main price to be paid for the PC's graphics flexibility is the complication of finding the correct monitor.

At the simplest level, you can connect all display adaptors to a monochrome monitor. Although there is obviously no question of colour display, systems like the CGA, EGA and VGA cards will operate in mono mode, substituting up to 64 shades of grey for the usual colour shades.

Ascending the scale of graphics power also takes you up the price scale. The cheapest PC colour

monitors are CGA-compatible systems - digital RGB monitors capable of displaying 16 colours. Although these monitors are colour-compatible with EGA, the higher vertical resolution of the EGA cards mean CGA monitors don't work.

Dedicated EGA monitors are also digital RGB, but have a higher scanning frequency to get the extra lines onto the screen.

The introduction of the VGA standard brought a matching development in monitor technology. The multicolour monitor. These models have much higher frequencies

capable of displaying the very high resolution of the VGA modes, and are also analog RGB types, necessary for the large range of colours supported.

But if these monitors displayed only the VGA modes, they would be obsolete with the earlier CGA and EGA adaptors. Therefore they need to be able to change scanning frequency according to the graphics mode in use. Unfortunately, these advanced features don't come cheap.

As a rule of thumb, monitor prices over £100 are: a mono monitor might cost £100, a CGA set £200, an EGA set £300, and upwards of £400 for a multicolour model.

## Software Compatibility

There is a broader issue of software compatibility with all video adaptors. Clearly, software written for a powerful adaptor will not work on a simpler system. More frustrating is the reverse, software that will not run on more powerful systems even in

its original, graphically poor, form.

Although there is a large overlap, e.g. between VGA and EGA, in most respects adaptors differ from each other in crucial ways. Screen memory can be in different locations, so that any

program that alters video RAM is unlikely to work on other adaptors. This is common with games software.

There are particular problems with Hercules mono graphics adaptors. Although the vast majority of applications - such as word processors, spreadsheets and databases - will run happily on Hercules systems, again few games will.

## Where Amstrad got it wrong

Owners of the older Amstrad PCs (1512 and 1540) have a peculiar set of problems when it comes to graphics adaptors. At the root of many of these difficulties is Amstrad's decision to put the system power supply in the monitor - a decision it has thankfully stopped in its PC2000 range. Although the PC1512 supports both mono

and EGA displays, you can't simply hook your mono monitor for a CGA unit without also buying a standard PC power supply for your system unit.

Things are further complicated by the fact that Amstrad hardened the video circuitry to the main motherboard, which means that you're stuck with the graphics stan-

dards supplied with your machine. The only way 1512 owners, for example, can move up to EGA is to sell their entire system and buy an EGA-equipped PC.

Although Amstrad did provide its own 16-colour mode, ostensibly meeting some of the demand for EGA, it is completely non-standard and therefore precious little software took advantage of it. Amstrad itself recognised the problem and as longer supports the 16-colour mode.

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OT 9: 8 out

# TIMES HAVE CHANGED...

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*Clair Mainwaring, Amstrad Professional Computing, September 1988*

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*Desktop Publishing, March 1988*

# GST

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**W**elcome to the New Computer Express games section, the liveliest, most up-to-the-minute reviews pages for miles. You'll notice that our reviews are laid out differently from run-of-the-mill computer mags. We:

- use a simple, no-holds-barred, no-fuss star-rating system, where only the very best games get the coveted five-star rating.
- break up reviews into easily-digested sections relating to scenario, gameplay, graphics etc. — no more hunting through great wadges of text to find out what you want to know.
- take version differences seriously. You'll always know what machine the game's being reviewed on, but we'll give you information about other versions too.
- give games of particular merit their very own box, together with a flash to say what's so good about them.

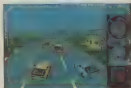
## 944 TURBO CUP

CORNER

ST: £16.99/£22.99

Amiga, CPC

(versions planned for PC, Sega, GBA)



It's turbo time as you push that Porsche on course

Coming firmly back to Earth after the hovering hijinks of *Space Racer*, *Loricicle's* 944 sets out to simulate top French racing driver Rene Metge's skills at the wheel of his 250 b.h.p. Porsche Turbo.

An Monsieur Metge is the man who rescued Mark Thatcher from the Sahara, you might well expect this game to feature plenty of brainless driving. But you'd be wrong.

### ● GAMEPLAY

You can choose between four circuits of varying difficulty after qualifying for your start position from a practice lap where you're the only car on the course. Then you're up there with the pros and pushing that joystick for all it's worth to steer your way to first place within the two laps that constitute each race. Control is pretty responsive and can either be effected by keyboard or one or two joysticks.

Two joysticks? Yes, one for acceleration, braking and steering — the other for gear changes — but don't despair if you don't have two, gear changing will be automatic.

Gaining your way round practice laps is fine — after a little practice the Porsche settles down to your grip — but it's in the racing that things get a little hairy. The other drivers weave all over the place and it's all too easy to collide and difficult to overtake. To make matters worse, you seem to be the only driver who's car is vulnerable — all other vehicles career on without a dent in sight. Take a bend too fast and you spin out of control, hit one of the immortals and you lose valuable time while your car miraculously regenerates backside.

### ● GRAPHICS AND SOUND

944 comes on two discs, the first containing a load of screens and some of the best digitised music you're likely to hear on an ST — Captain Blood's

intro included. Then it's down to the pummeling of the Porsche as you punish it around the scorching circuits. Your view of the action is from over and behind the car you're driving rather than the more usual cockpit viewpoint. But despite feeling as though you're manning a helicopter camera, you soon get the feel of the wheel. All cars are solid chunky sprites set on backgrounds featuring grandstands, signs and arrows beside two and three-lane roads.

### ● OTHER VERSIONS

The ST, Amiga and PC versions will come with an optional model Porsche, hints and tips from Rene Metge on each of the courses and tech-specs on the Porsche for an extra £4. If you want these on the Bbits you'll have to send off for them. It's too early to say what the other versions will be like yet but it's a fair bet that the Amiga one will take pole position by employing stereo FX.

### ● EXPRESS VERDICT

Frame update isn't spectacularly fast and control is a little finicky but neither really detract from an above average speedo-sim. Half a dozen more circuits and a bunch of drivers who hit the tarred from time to time would improve it no end. 944 scores high in the Road Wars when up against the likes of *Gut Run* but it's a close race against the realism of cockpit-view sims.

☆☆☆

Andy Storer

## TOMAHAWK

ARCADIA ENTERTAINMENT

PC: £12.95/£19.95

Amiga, PCW, Spectrum, ST, PC, GBA, Sega



● Detailed instrument panel and fast-moving 3D graphics make this a graphic treat on the PCW

*Tomahawk* is rather long in the tooth for review now, but for the fact that the PCW version is now 9512 compatible.

### ● VERSION UPDATE

The PCW version of *Tomahawk* is reckoned by many to be the best of those available, and although it's now a couple of years old, it's still an excellent game — particularly on a machine where

new games releases are few and far between.

The game is a helicopter combat/flight sim based on the U.S. Army AH-64 Apache Advanced Attack Helicopter. Four missions are available, ranging from simple flying training through combat to strategic domination of the whole map area.

In addition to this, four difficulty levels can be selected, not to mention a range of different flying conditions — day/night, clear/overcast, height of clouds, crosswinds and turbulence. The last option is recommended for the experienced pilot only.

*Tomahawk* is about as accurate a helicopter simulation as the hardware permits, so don't expect to be able to sit down and fly your Apache like a veteran within the first five minutes — or five days, for that matter.

Those four missions give you a great deal to do, and with the various difficulty levels and flying conditions available it'll take a long, long time to burn this game out. Unless you've got absolutely no patience with instruction books, the message for PCW owners is simple. Buy it.

☆☆☆☆

Rod Lawton

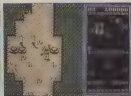
## GUERRILLA WAR

AMIGATO

Spectrum: £14.95/£19.95

Amiga, GBA, CPC

Amiga, Spectrum, ST, PC, GBA, Sega



● Indifferent graphics on the Spectrum version — can you spot the bad guys?

Imagine's latest offering is a conversion of the Shin Nihon Kikaku Corp. (SNK) arcade coin-op *Gematria War*, which is a multi-level, vertically scrolling shoot-'em-up in the *Commando*/*Ikari Warriors* mould.

### ● GAMEPLAY

You take the role of a marine assigned to rescue some helpless inhabitants of a tropical island taken hostage by an evil dictator (and his minions) known only as The Tyrant.



Armed only with a machine gun and grenades, it's your duty to kill on sight any enemy forces that try to stop you. On your mission through swamps, rivers, and ruined towns you'll not only encounter grunts (foot soldiers to me or you) but also tanks, emplacements and devices traps. Fortunately, armament improvements can be found along the way, such as bazookas, flamethrowers and the ultimate toy - your very own tank.

Each of the five levels contains a different style of enemy attack pattern and end-of-level guardians - who is tougher than your average mercenary, requiring approximately 50 shots to kill.

At the end of the fifth level, you'll find The Tyrant within the splendor of his grand palace.

#### GRAPHICS AND SOUND

The individual sprites and background elements are good, but are let down by their merging together during play - making it hard to see your minie in the heat of the action. The vertical scrolling is competent rather than exceptional.

Guerrilla War is accompanied by a funky little soundtrack on the title screen with functional speed effects during play.

#### OTHER VERSIONS

The C64 and GPC versions should be available as you read this, with the ST and Amiga versions following shortly afterwards. No other details are currently available.

#### EXPRESS VERDICT

Guerrilla War replicates its arcade parent quite closely in the audio-visual departments, but despite the simultaneous two-player option, it fails to produce a really playable game due to the sprite-back-ground merging factor.

Guerrilla War is one for fans of the arcade game or Commando game only, and is definitely one to buy before you buy.

0000

Rik Haynes



The first of nine 16-bit games to be released by this German company via a tie-up with Microprose, Crystal Hammer is a Breakout clone high on style.

How does it match up to its definitive predecessor - Arkanoïd? - or for that matter Crack, Impact, Toxic Tile and Ogamioid?

#### GAMEPLAY

Bot and ball screen games have been around for so long there shouldn't be anyone out there who doesn't know what you have to do. Crystal Hammer features



Crystal Hammer's stunning backdrops and fast animation push screen updates to the maximum

# LOMBARD/RAC RALLY

MANDARIN

ST • £24.99

Due out soon on Amiga, PC

Over the years there have been umpteen car-racing games released onto a market that's not too choosy about the level of simulation involved.

Recent outings along the lines of Roadblazers, Overlander and Fire and Forget have added blazin'-as-features to the endless circuit driving. Release a variation that combines depth, skill and strategy and you're onto a winner. Aren't you?

#### GAMEPLAY

The full Lombard RAC Rally has you driving your 3000hp Sierra Cosworth against the clock around 15 stages of the 5 legs comprising the event. But you must first prove your competence by playing all five legs in any order you wish and win 100,000 prize money by finishing first, second or third in any one of them.

Each of the 5 legs consists of 3 separate stages - road, mountain and forest - and on selection you are given displays of the route map, the route type and conditions (daylight, night and fog), the prescribed times, the prize money for achieving these times and the competition you're up against.

Driving the Cosworth with a joystick is pretty straightforward; you steer by pushing left and right and accelerate or brake by pushing forwards or backwards. Changing up or down the gears is achieved by clicking on the five while moving the stick forward or back.

Effective gear-changing is the key to Lombard - the twists and turns, hills and valleys, and variable visibility all combine to require some fast reflex action. It's all too easy to miss a bend or misjudge your braking and thereby leave the road surface or hit a passing tree - varying damage to your car will result and you'll lose valuable time. This means you'll need to keep an eye on the state of your engine, bodywork, suspension and tyres because sooner or later you'll have to enter the workshop for repairs. And, of course, repairs cost money.

If you don't have much luck finishing anywhere, let alone in the first three, you can opt to 'appear' in a TV interview where, correctly answering a series of questions will top up your cash balance.

#### GRAPHICS AND SOUND

Getting to grips with the Cosworth's handling characteristics is made more difficult by the size

of the windowed view of the road ahead. Only the top third of the screen is devoted to the route at hand - the remainder comprising a view of the cockpit interior replete with convincingly animated steering wheel, dials and gear changes.

The view ahead, whilst scrolling smoothly enough, could perhaps have been a little larger but then this does have the effect of speeding up the action considerably and compensating the sense of urgency when you're battling for a winning time.

Each of the three terrains is well-depicted - the mountain sequences being especially worthy of note. A nice inclusion is in those stages where you're driving through fog - the distance you can see ahead is instantly dependent on the state of repair of your headlights. It's

FEATURE  
PACKED



Up into third for the long haul along the mountain edge



It's the workshop and time to hit out the Cosworth legions

next touches like that which add a degree of realism. Lombard and audience its attempt at authenticity. But sound effects are less convincing - it's not easy to hear when you're over-revving and need to change gear because different rpm sounds tend to be largely indistinguishable.

#### EXPRESS VERDICT

Lombard/RAC Rally is a great attempt to convey the peaks and pitfalls of the world of rallying. If you're tired of the same-old tracks and bored with highway hunkies, then this one's well worth a look. The variety of gameplay and attention to detail should ensure its success.

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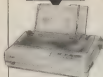
Andy Storer

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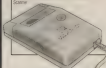
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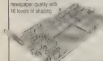
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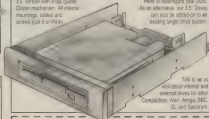


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HILES GORDON  
TECHNICS



tures 30 levels of blocks which need to be destroyed and 8 types of mending obstacles designed to make that objective a great deal more difficult. There are all the usual feature-capsules you must catch - giving you lasers, triple balls, extra lives and so on. Where *Cystal Hammer* differs slightly is that some of these capsules automatically switch you to the next level while others destroy you.

#### ● GRAPHICS AND SOUND

Dense block arrays on super-solid backgrounds make *Cystal Hammer* an enjoyable visual feast. Whilst the animation of the ball is both ultra-smooth and, at times, incredibly fast, that of the moving obstacles has an intended flicker which unfortunately veers towards epileptic frequencies. Spot sound effects only add atmosphere to visuals of this quality and serve to rescue you from complete and utter misrepresentation.

#### ● EXPRESS VERDICT

If Breakout clones are your scene and an Arkanoïd - Revenge of Doh has yet to appear on the Amiga, *Cystal Hammer* may well be worth a look. Of course you may have already purchased *Gargaid* in which case you probably won't bother. But if the difference between 15 and 20 quid is a big one for you then *Cystal Hammer* is the one. Don't forget the Glazed.

\*\*\*

Andy Storor



● What will the Anti-Social Software Committee say about the *Ugh* you ever?

*Caveman Ugh-Lympics* takes the familiar joystick-mugging sports-sim genre and places it in a new scenario - prehistoric times.

#### ● GAMEPLAY

After choosing your *Caveman* from a selection of six athletes - each with their own strengths and weaknesses - it's time to compete in each of the awaiting events: Male Toss, Chubing, Dino Vault, Dinosaur Race, Frenkling and Slobreboth Tiger Race.

#### ● GRAPHICS AND SOUND

*Ugh* contains a wide variety of cartoonstyle sprite designs. Unfortunately, their definition is blocky, with very few hints of animation. The backdrops are simple but effective.

Soundtracks and sound effects are very rudimentary - with some soundtracks being intentionally awful.

# THE MARS SAGA

US GOLD

GBA - £14.95

No other versions planned

Compared to the exotic locations of most fantasy role-playing games, *The Mars Saga* takes place almost on our own back doorstep.

Your task, as adventurer Tom Jelland, is to learn what fate has befallen one of Mars' four cities, Proconsul, the farthest outpost on the newly colonised red planet.

#### ● GAMEPLAY

You start your adventure in the Martian city of Proconsul, basically penniless, homeless and clueless. You will gain experience points only from your travels and encounters with other residents - not the easiest of things, bearing in mind Mars has been colonised by convicts brought in to work in the Martian mines. It's difficult to travel far in the city without being accosted by muggers or hoodlums.

The first phase of the game is largely exploration, as you move about the city. Your position is shown in a window in the top right of the screen, on a map made of a grid of squares. These are all blank to start with, but as you move through the city they disappear two blocks ahead of where you're 'looking' to show the layout of buildings and streets.

Top left is a window showing the view as seen through Tom Jelland's eyes. Below these two windows are the readouts for Tom's health, Agility, Stamina and Health as you recruit followers, their attributes are displayed too. At the bottom of the screen is a command box.

There is actually quite a range of buildings, including bars, armories, hospitals, combat training centres and many more. If you sustain injuries during combat it's not a bad idea to trot along to the hospital to get yourself fixed up, while a visit to an armoury could see you better equipped next time.

Combat is almost a subgame in itself, and can be handled either automatically by the computer or manually. The map screen is replaced by a blow-up of the combat area, and both you and your assailant are represented on-screen by small, viewed-from-above animated characters.

To recruit followers to assist you in your quest

you'll need to frequent the many local bars and eye up the customers. All mining operations have since been suspended (rather conveniently), so there are plenty of prospective allies kicking their heels at the moment. Once you've assembled your party and you're moving through the city, you can readily swap items from one to the other, and change the leader according to the hazards you face.

A code wheel is supplied with the packaging, and you'll need this once you're ready to leave the city to get the correct access code. A subtle form of copy protection perhaps?

#### ● GRAPHICS AND SOUND

Given the nature of the gameplay, the graphics aren't the game's most important feature, and they are more than adequate for the job. The map window is rather basic (but that's all it needs to be anyway), while the action window is interesting only when there's something happening. The combat screen is possibly the most interesting visually,

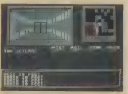
though in the early stages you'll probably be just watching the computer do work. Sound is good too, with a pleasant - if not - musical accompaniment.

#### ● EXPRESS VERDICT

There's only space here to give a glimpse of what the game is about, so *Ugh* is the right name for it. There's so much to do and explore, with so many options to investigate it'll keep you going for a long, long time. The control method is simple and effective, without some of the horribly repetitive command sequences that mar other role-playing efforts. All in all, it's a good run.

\*\*\*

Rod Lawton



● Your view as you plot the streets of Proconsul

#### ● OTHER VERSIONS

*Ugh* is only available on C64 disk III present, but a C64 cassette version is currently under consideration. No other versions are planned.

#### ● EXPRESS VERDICT

*Ugh* is a novel twist on the old sports-sim theme,

using a very original and humorous approach. Short-term appeal is assured, but long-term interest is doubtful. *Ugh* is probably a game for younger gamers only.

\*\*\*

Rik Haynes

# RETURN OF THE JEDI

DOMARK

ST • £19.95db

Also on Spectrum, C64, CPC, Amiga

A long time ago, in a galaxy far, far away...well 1988 UK, actually - yes, that's right, The Force is with us again thanks to the guys at Domark.

Return of the Jedi is the third in a trilogy of home computer conversions - of the arcade games - of the movies - of the books - of the ideas - of George Lucas's Star Wars saga.

### ● GAMEPLAY

Jedi is different to its predecessor in that it's not a vector-graphic game - images are in a pseudo-3D, diagonal-scrolling shoot-'em-up style in a similar vein to the old classic, Zaxxon.

During the different stages of the game you control the various Rebel characters in an attempt to destroy the evil Emperor and his Imperial Deathstar.



● ST: Lando and Imperial forces are saving the world from the boss.

CLASSIC CONVERSION



● Amstrad: Lando sees the Millennium Falcon in its attack the Deathstar's reactor.

First it's Lando on her Speeder, battling it out against Imperial Speeders and naval hazards on the forest moon of Endor.

Next, the action splits between Chewbacca in an Imperial Scout Walker attacking the bunker protecting the Death Star's shield, and Lando Calrissian in the Millennium Falcon in a light or

space against Imperial Tie Fighters and Star Destroyers.

The final stage consists of Lando travelling through the inner workings of the DeathStar until he reaches the reactor - blasting it - and then dodging a hammer before the whole DeathStar blows.

### ● GRAPHICS AND SOUND

Jedi's visuals bear a very close resemblance to their arcade parent, with very smooth animation and scrolling throughout.

Audio consists of adequate sound effects with scratches of the many Star Wars tunes. Also included are digitised speech extracts from the movie, which can only be recommended by virtue of quality rather than quantity.

### ● OTHER VERSIONS

The Amiga and Atari versions of Jedi should be available as you read this.

### ● EXPRESS VERDICT

Jedi is a playable and easy to get into game, with only lasting interest doubtful - so check it out, and May the force be with you!

★★★★

Rik Haynes

## TRIVIAL PURSUIT: A NEW BEGINNING

Imaginative Arts  
How to beat the computer

Get this - It's 2045, the Earth is dying and you, your family and friends have been assigned the task of carrying civilisation to the only known planet fit for human habitation outside the solar system - Genus 2.

However, it has been agreed that only those who have a superior knowledge of Genus Trivia will be admitted. Sound a little consoled? You ain't heard nothing yet!

### ● GAMEPLAY

You and the other players are depicted by small robots who blast off through a starfield on your way across six galaxies to join the Mensa clones on Genus 2. Each galaxy has a bunch of planets which you can select to land on and have a question asked of you on a range of subjects.

It's largely a hit-and-miss affair as to what type of question you'll be asked there, but there are supposed to be clues lurking in the planetary names to signify the subject.

Once you've selected your planet, you are greeted

by a bizarre alien who produces a 'question bubble' out of thin air. You then answer out loud and click the mouse, whereupon the correct answer is displayed on screen and you're asked to confirm whether you answered correctly or not - you'll have to rely on either your playmates or your conscience to rule out cheating here. If you're wrong, play pauses to the next player, if you're right, you go on to the next planet in that system.

Some planets contain droids such as scrolls and microscopes which you can collect if you answer the posed question correctly, whereupon you're teleported to another galaxy. And the next series of



● Plus you'll have to learn over before this gets to No. 1

questioning begins. Find all six objects and you're off to Genus 2 where you're greeted by six white-haired dwarfs with beards who represent different

subject questions.

To win the game you have to answer all six questions correctly, one after another. It's no good just getting 5 right - next time it's your turn you'll have to tackle all 6 again.

### ● GRAPHICS AND SOUND

Graphics are for the most part quite laughable - but then for Trivial Pursuit you'd hardly expect state of the art solid 3D multipleplane scrolling would you? What's there probably doesn't top the Amiga anymore than regarding it's internal clock. Okay, so the effect the authors are after is cartoon strip - and in terms of humour that's what they've achieved.

Some of the questions are accompanied by short musical bursts sounding as though an orchestra's been recorded down the phone whilst others come with primitive graphic representations even members of Genus could have drawn.

### ● OTHER VERSIONS

Available also on the ST, Spectrum, C64, and CPC, A New Beginning is probably better suited to the B-bits where it's low-cost appearance won't be so apparent as on the most powerful of the bunch.

### ● EXPRESS VERDICT

Not really worth buying unless (a) you're a terminal trivia addict; (b) you're under 18; (c) you want a good laugh; (d) a combination of all three. We just can't wait for the next instalment - Escape from Genus 2!

★★★★

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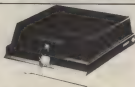
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# It's back!

**PETER WORLOCK documents the rebirth of a much-maligned programming language**

## Compiler vs Interpreter

Computer languages come in two flavours, interpreted and compiled, and each represents a trade-off between two factors: ease-of-use and speed.

Interpreters are easy to use. When you run a program, the interpreter scans each line, makes sure the syntax is correct, translates it into machine code, then executes the instructions.

Because every instruction is checked before operation, the interpreter can spot any errors before they occur, stopping execution and giving an appropriate message pin-pointing the area of the mistake.

You can then correct the error, usually quickly and easily, before re-executing the program.

The drawback to this friendly

way of working is the lack of speed. Obviously, the interpreter has a lot of work to do, and cannot do it very quickly.

Compilers overcome this speed limitation by translating the instructions into machine code only once, thereby allowing your programs to run much, much faster than comparable interpreted programs.

However, although compilers can spot obvious errors in your code - things like misspelled instructions, and missing data - they can't spot the more subtle 'logic' errors that only occur when the program is running.

This means that the actual writing of a program for a compiled language can take much longer. You cycle repetitively through the

stages of coding, compiling, running, error-checking, re-coding, etc. In a sense, this is the real difference between the two methods: compiled programs are slow to write but quick to execute, while it's vice versa for interpreted code.

The picture is complicated by two further considerations. Recent compiled Basics, like Turbo Basic and QuickBasic on the PC, and HiSoft Basic on the ST, compile so quickly that for many programs they are as interactive as interpreters.

Secondly, some compilers will handle the code produced by your 'standard' interpreter, so you can enjoy the ease-of-use of an interpreter in writing your programs, and once the code has been completely debugged, you can then compile it, thus enjoying the best of both worlds.

**T** rue or false?

- 8K is plenty of RAM
- 16 colours are all you'll need
- Tape cassettes are an adequate form of storage
- Basic is the computer language of choice

Five years ago all four statements would have been generally accepted as true. Today, most users consider them hopelessly false. Amiga and ST owners are beginning to recognise that even 1 megabyte of RAM is barely sufficient, a good colour range runs into hundreds of shades, and cassettes are out except for games.

But if you think Basic is dead as well, you are wrong. Despite the long and seemingly innovative rise of rivals such as assembler, Pascal, C and Modula-2, Basic is back with a bang.

## The fall...

The death away from Basic was driven by a number of factors. First, as the software industry developed, the arrival of more and more commercial products reduced the need for computer owners to do their own programming. Second, it became obvious that Basic programs could not match the speed and quality of those commercial packages.

Third, as the hardware developed, Basic got rather left behind - a problem typified by the Commodore 64 which provided excellent sound and graphics that were difficult or impossible to control through the machine's primitive and clumsy Basic.

An adjunct to this latter problem was the rise in popularity of windowing software environments offering multiple display windows, pull-down menus, and mouse-controlled pointers. Once again Basic lagged behind the times and offered no way of controlling, or replicating, these popular features.

## ...and the rise

However, recent developments have either overcome these problems, or rendered them less important. The first significant change was the move to what might be called 'soft systems'. These machines can be contrasted with hard systems like the Spectrum, BBC Micro and Commodore 64 in which the operating system and Basic lan-

## Why ST owners must upgrade

Atari ST owners are almost spoiled for choice when it comes to versions of Basic - and with good reason, because Atari's own ST Basic was a dog. Sadly lacking in commands that controlled the power of the machine, and bug-ridden into the bargain, the best thing to be said for ST Basic was its price - it was free.

Atari has remedied some of the shortcomings of the original, but rival versions have now established themselves as near-standard products and ST Basic remains the poorest current option for the would-be Basic programmer.

The first alternative was Computer Concepts' **Fast Basic** which rapidly assumed the status of a de facto standard among ST owners. It was fast, as the name implied, but better still was the fact that it provided full control of

the GEM operating system, including windows, menus and the mouse.

It was supplied on plugin cartridge which proved to be both a strength and a weakness, in its favour, the cartridge format meant there was no waiting while the interpreter loaded from disk, and it also freed up more memory for the user's own programs. Against that was the fact that you couldn't give friends a copy of your programs unless they also had the Fast Basic cartridge.

The next Basic on the ST scene was Gintop's **GFA Basic**. This was also an interpreter but ran at blazing speed, particularly in graphics programs. The king on the cake was the release of the GFA compiler which speeded things even further, but more importantly allowed the production of stand-alone code so you

could give (or sell) copies of your programs to any ST owner.

Naturally, GFA Basic was not flawless, but Gintop has upgraded the product (version 3 is due very soon) and the availability of GFA tutorials, books and add-on modules such as a vector graphics package, have turned GFA Basic into an outstanding language. At least one commercial product - Microdine's **Sluggo** - was written in GFA Basic.

Third up was HiSoft with two products, **HiSoft Basic** is a full-blown compiler compatible with Microsoft's QuickBasic on the PC; it's fast and flexible and offers a number of interesting features such as machine-code libraries for graphics etc. One of its most fascinating features is the ability to produce ST desktop accessories.

HiSoft's **Power Basic** is essentially a cut-down version lacking the libraries and a few other features, but also about half the price of its big brother.

gauge were built into the machine, hard-wired on the main circuit boards.

Often the OS and Basic were integrated which made them almost impossible to alter, and while better Basics could be loaded into memory they cut down the amount of usable RAM to unworkable proportions.

By contrast, soft systems like the PC and the Amiga are essentially empty boxes. The operating systems are loaded from disk as are all programming languages including Basic. The ST is half a soft system - the GEM operating system is hard-wired, but Basic is an external product.

**"The new versions of Basic have been stripped down, re-designed and re-built to be faster and more flexible."**

Although the manufacturers of these machines include a version of Basic, you are no longer limited to just that implementation. If you want a better Basic, you can load it from disk and sit it in the machine instead of, rather than together with, the supplied version.

This is particularly important on the PC and ST where the supplied Basics are very limited, old-fashioned implementations of the language. Amiga owners are more fortunate in getting a top-class product.

The second force for improvement was the arrival of the new machines themselves. The PCs, Amigas and STs are faster, more powerful computers offering many

## Two of the best on the PC

As in so many software areas, the PC has the widest choice of alternative Basics, but more importantly it has the best from two of the leading names in software: Microsoft and Borland.

There's little to choose between the two. Microsoft may not have invented Basic, but it more or less established the standard. Microsoft Basics have appeared on every PC and clone ever pro-

duced. The excellent Basic for the Macintosh is a Microsoft Basic, as is the Amiga's top-notch version. Meanwhile, Borland's Turbo Basic has been called the best version of Basic ever produced.

Both provide a multiple-windowing editor for program writing, the compilers are very fast in action - so much so that for many programs they have all the interactive feel of an interpreter - and the

programs you write with them will run very quickly too. In this latter department Turbo Basic has a slight edge, so if speed is crucial that might be the deciding factor.

Advanced features include true recursion and interrupt-driven functions. Both products allow you to integrate machine code routines quite easily (although not ideally). Both QuickBASIC and Turbo Basic set for 160 is larger than PC software standards and your only problem is likely to be choosing between them.

more features in hardware than their older 8-bit counterparts. It is therefore easier to write professional-looking software without the need to resort to assembler. Of course, these Basic programs cannot be as powerful or as fast as similar products written in C or assembler, but can still be perfectly adequate.

Last, but not least, are the new versions of Basic: still the same old language, but stripped down, re-designed and re-built to be faster and more flexible. And in some respects it can offer advantages over rival languages.

### Tailor-made and easy to learn

For one thing, Basic still tends to be tailored to the target machine, so in the new versions you're likely to find specific commands for controlling machine-specific fea-

tures like sound, graphics, sprites, a mouse, and so on. Pascal, C and Modula-2 usually try to conform to generic standards regardless of hardware, therefore the version you buy will probably lack these valuable commands. Instead, publishers provide libraries of routines for controlling these non-standard features, but these libraries make programming more complicated.

Basic also remains one of the easiest languages to learn. It uses an English-like syntax, and is fairly relaxed and friendly in dealing with errors. By contrast, C is not at all English-like and can be downright hostile. Pascal and Modula-2 are better in this respect, but they are rigid in the way they treat data and program development.

This strength of Basic has always been considered by some to be its major weakness. The critics argue that Basic's flexibi-

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# What is an operating system?

Express steps back into history to explain the master control at the heart of your machine.

In the early days of the microcomputer, the machine were simply collections of dead silicon—a sort of blank electronic canvas on which programmers could create their magic. When these machines were switched on they simply sat there and bumbled to themselves, even until they were incapable of doing anything else until they were programmed to do so.

Programming consisted of physically altering the hardware by means of switches, a laborious process even if the computer only had 512 bytes of memory (half a kilobyte). But at that time there were no alternatives: you couldn't use a key-board, because the computer had no way of interpreting the signals from the keyboard.

Then you obviously saw the limitation, and one of the first developments was to provide the computer with a better way of communicating with its user, by allowing instructions to be entered by keyboard, and allowing the computer to display information on a monitor. These basic functions had to be provided by special programs stored permanently in the computer in ROM memory chips, so that they were available at all times.

Then was the first step towards the operating system. Eventually, more functions were added to this collection of low-level procedures, making computers more flexible and more intelligent.

For example, without some way of permanently storing your programs and the information you want them to work on, every time you wanted to use the computer you'd first have to type in the instructions that make up the program, then you'd have to type in all of the data. Only then could you do any work. The solution is to store both

software and data on tape or magnetic disks, but how to do that?

Of course, you could create your own sub-program to send information to the disk, and in the early days that's what programmers had to do. But this has several drawbacks: it's a waste of time for programmers to be constantly re-inventing the wheel, and if two programs use two different methods of storing data, it's very difficult for them to share information. The same problems apply to writing data to the screen, reading keypresses from the keyboard, and all the other basic operations needed for computers to work.

A programmer called Gary Kildall was among the first to realize the benefits of a standard operating system, so he wrote one: the Control Program for Microcomputers, or CP/M.

The importance of CP/M was that other programmers no longer had to write their own routines for keyboard, display and storage control—they could use CP/M's. This meant shorter program development times, allowing more effort to be devoted to writing programs that were really useful, not just mostly functional.

After this came benefits for users, not only did they get more useful software, but they got more of it. If you were a *Pet* or *Apple II* user, you could only use software written for your machine. But if your hardware could run CP/M, you could run any software written for any CP/M computer.

Out of this came the first great microcomputer software: *Mincalc*, a spreadsheet, *Wordstar*, a word processor, and *dBase*, a database. Thanks to CP/M, microcomputers became useful tools, instead of technical novelties. And that success aroused the interest of IBM.

Up until this point (around 1980), real computers had meant giant mainframes, and the most

successful manufacturer was IBM. But sales of CP/M machines had reached such a level that IBM could no longer ignore the upstart and it decided to join in.

However, CP/M was designed to run on 8-bit computers, and IBM wanted to launch a 16-bit machine. Gary Kildall's company, Digital Research, had a solution—but lost out when a version of CP/M for IBM decided to use the IBM operating system from a smaller company, Microsoft. The product was MS-DOS (Microsoft Disk Operating System).

The rest, as they say, is history. MS-DOS is now the most widely used operating system in the world, and more software programs run under MS-DOS than most of the other systems combined.

So why doesn't everyone use it? The answer is money. Naturally, Microsoft wants a license fee from everyone who uses it. The license is money, but Microsoft's license fee is less than everyone else's. Microsoft wants a license fee from everyone who uses its computer, and a lot of people in companies feel Microsoft is already quite rich enough.

More importantly, MS-DOS is showing its age (despite having been continually upgraded) and doesn't get the best out of the new hardware.

Most important of all, it only runs on the Intel family of central processors, so it isn't even an option for computers like the *Atari ST*, *Commodore Amiga*, and *Apple Macintosh* which use processors from the rival *Motors 68000* range.

These differences also explain why there has been such a difference between operating systems for what are generally perceived as business computers, and those for home/personal use. MS-DOS (and CP/M before it) wasn't designed as a business operating system, but it appeals to business buyers because it's a standard, because it's well-documented and understood, because there's a vast range of software supporting it, and because it widens the choice of hardware suppliers.



One of the first developments was to provide the computer with a better way of communicating with its user.

## Glossary

Here are brief definitions of some of the more common computing terms.

**HARDWARE:** The computer itself: keyboard, monitor, display, etc.

**SOFTWARE:** Programs—i.e. lists of instructions—which control what a computer does. A game or word processor you buy is a *shop* software.

**RAM:** The memory used by a computer to store programs loaded into it from disk or tape or typed in from the keyboard. The contents of RAM (stands for Random Access Memory, but don't worry about it) disappear when power is switched off.

**ROM:** Contains instructions stored permanently by the computer.

**BYTE:** The basic measure of memory. One byte can store a single letter of the alphabet or number up to 256. 1024 bytes make a kilobyte (abbreviated to K). So a 512K RAM computer has 524,288 bytes of RAM memory.

**CENTRAL PROCESSOR:** The microchip at the heart of a computer (with a name like 286 or Motorola 68000). Also known as CPU (Central Processing Unit).

**LOW-LEVEL:** Describes programming instructions which can be executed directly by the computer's central processor.

**8-BIT/16-BIT:** Describes particular types of central processors according to how much information they can process at once. A 16-bit processor can process twice as much information in a single step, giving it far greater power than an 8-bit.

## "I didn't know my machine had one"

The operating systems called MS-DOS and CP/M are products in their own right—they can be bought as a physical package containing disks and manuals.

You might be forgiven, then, for thinking that if your computer doesn't have anything like this, it doesn't have an operating system. Wrong!

On the older home computers like the Spectrum, C64, BBC Micro and so on, the operating system was built in. Moreover, it was usually closely tied to the Basic programming language.

This was because there was little commercial software available for early computers. You

usually had to write your own, so the Basic language was provided free. And since Basic itself provides a number of operating system features—like the ability to load and save programs and information, and display characters on the screen—it made sense to merge the operating system and Basic.

Further, because these computers used cassette tape for storage, it was a great benefit to have the OS/Basic permanently in the computer—4 or 8 are built-in while others are supplied on disk. Upgrading is now much simpler—just an Atari and Commodore would get round to offering an upgrade.

the software to load from tape.

However, once disk storage became cheap enough for home computers use, a built-in operating system was less attractive, because it makes upgrades very difficult and expensive (needing a dealer to replace the old chip).

For this reason, the ST and Amiga (and the PC, as a matter of fact) use a compromise system where most of the low-level parts of the operating system are built-in while others are supplied on disk. Upgrading is now much simpler—just an Atari and Commodore would get round to offering an upgrade.



# Chuckie Egg

## ARCADE STYLE GAME

from one to four players. Who'd have thought a country farmyard could be so stressful? You must collect the eggs before the nasties get out and eat up all your corn. Watch out for the crazy duck - if she gets out of the cage, you're in real trouble! You must collect all the eggs to proceed to the next screen. Look out for hidden eggs!

## CONTROLS

Select your own keys or joystick. Full instructions included in the program.

## GAME PLAY

The game plays over 4 groups each of 8 screens which become progressively more difficult. Survive all 32 screens and the speed then increases to present

even greater challenges. The game will play an indefinite number of levels. There is no limit to the high score table!

This classic computer game is now being released for Amiga, Atari ST and IBM PC.

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# THE RACE FOR CHRIS

## MUNSTERS AGAIN

25-1

This first release of Atari's new full-price label is an arcade adventure we've seen and loved. The Munsters family home and starring Vincent Van Dine, Herman, Herman's wife, and Gomez, and werewolf Eddie as they attack the kidnapped Marilyn - the subliminally become one. Excellent graphics provide a great background in a gameplay featuring magic and all manner of gizmos. You even get to drive the flying blue bus.

## BATTLEMAKES 1942

14-1

YIP... Lucidfilm zooms out of Hollywood to light up the micro-market using its digital video engine images working through 1500 megabyte games. Battlemales gives you the action of a game appealing to combat via built with a speed, attack angles, weapons and tactics presented with a view to ensuring the visual intensity of WW2 aerial warfare. It's a wildcat fighter, countless dive bombers and fighter squadrons as you attempt to take out every Axis while a mission takes the Pacific.

## BAAL PYGMAES

16-1

Pygmaes graphics have always guaranteed good sales and this one will certainly get them in the running for the Christmas high status, even if they don't have quite the marketing clout of the bigger publishers. You're a command of an elite force of Time Warriors up against the supreme God of Evil in a strategic eight way strategy 3D 150 to 1000 screen. But you'll have to deal with 100 monsters and 400 traps across 3 multi-level domains in a bid to find the 80 parts of the Way Machine capable of finishing the job for you.

## AFTERBURNER MEDAZONE

14 HW

In massive success in the arcade this year has made the official license the Medazone. Backed by a massive promotional campaign, Medazone's hit-list for the top spot takes you to the stars in your F-34 to give you way through endless enemy aircraft. An ultra-fast combat class with 15-bit conversion by the high flying Argonauts of Dangle 2 fame. Afterburner ships in video only you can't see the ship while you pilot that 300 mph and search for a means to get to your goal.



• Atari ST times as Marilyn goes missing. Also due out on Amiga, Spectrum, C64, CPC, MSX and November.



• On the PC, the style of the war of Star Wars since 1942. Also due out on ST and Amiga late December.



• The ST shows off yet more great graphics from Pygmaes. ST and Amiga versions all mid-November and due out on C64 in December.



• On the C64 and flying high in the shoot-out stakes. Also due out on Amiga, PC, in late November and Spectrum, SA, CPC, MSX in early December.

## THUNDERBLADE II

3-1

Playing for another Our Rock, US Gold are putting out all the stops with conversions of the Sega arcade smash-hit. It's over-head and over-shoulder viewpoints you control your attack cockpit through sky-scraper corridors in your way out to sea and a huge, heavily-armed air-craft carrier and its gunboats. Survive this and its on the carrier and finally in a bid to take out a flying battleship. (Before keep your finger on the laser machine gun button for this one).

## PRISON

200-1

Another new software label's first release and this one's a graphics adventure based on a penal colony planet where you find yourself after the location of the parts of its escape ship. It's a 3D game and puzzle are clearly guarded - it's a fun game by itself. However, after searching through acres after acres of desolation and taking out hordes of mutants on the way you might eventually get to take the last from your deck too.

## PHANTOM FIGHTER MASTER

30-1

Phantom's press release says, incredibly, that the ST couldn't handle the graphics on this one - which against the PC, C64 and TGA gives some interesting. Nevertheless, this task and destroy arcade combat can take you to the multi-colored levels of alien landscapes as you attempt to clear the skies of everything but clouds. With missiles, cannons and hi-g maneuverability that may not be too difficult.

## DARY GOLF ELECTRONIC ARTS

100-1

Dary Golf from the 3D dimensions reinterpreted as a new arcade game in one as you battle your way through a host of holes featuring don't laser beams, particle rays and transporter pads. A simple enough version takes to its widest edge. Dary Golf also includes moving walls, magic carpets, cables, windmills, pinballs and hunchbacks all strung together with great music and animation.



• Choppers at the ready for ST Thunderblade. Also due out on Amiga, CPC, Spectrum, C64 mid-December.



• Escape 80 outer space with Prison on the ST. Also due out on Amiga late December.



• Knight owners will fit among the new lucky enough to see this up and running. Also due out on PC mid-December.



• World isn't the word for PC Dary Golf. PC version due out early December. Also due out on ST and Amiga in new year.

## CARRIER COMMAND

100-2

The game that moved specialized action to its full 3D animated graphics on the ST, Carrier Command the Spacey in a real 3D ship along with the Mars fighters, space tanks, world domes and lasers to present you with the task of attacking a military spaceship from a rebel carrier in a bid to top oceanic range. Perhaps the game's most enticing feature is the real-time view control of multi-view perspectives.

action - you can have all your attack vehicles on the go at the same time and switch between them as tactics demand. It's too early to see whether its appearance in the Spectrum will require a drastic reduction in the number and variety of screens it be found on the 16-bit platforms but gameplay alone should require good sales. Don't be daunted by its depth though - you can opt for an 88 action game in which you're dropped into the middle of a re-

don scenario deemed to take place midway through a strategy game. Either way, Carrier Command involves a massive and complex combination of both strategy and action and could well keep you occupied for years.

Carrier Command makes it onto the Spacey - will be a right tugger. Already out on ST & Amiga. Due out on Spectrum early December and PC, MAC, PCW, C64 January.



# THAS NO. 1

Britain's leading leisure software houses are doing the final grooming of their runners in the year's biggest race: the Christmas Stakes. Last year U.S. Gold's Out Run romped home by some 300,000 lengths. Which full-price software title will be first past the post this time? **ANDY STORER** visits the Express bookies and previews 18 top contenders for the big Gallup.

## OPERATION WOLF CCSM

NS

## OUTPOST FRONTIER GAMES

2001

## MOTOR MASSAGE GREENH

64

## ROBOCOP CCSM

14

Possibly the most definitive shoot-em-up of all time. This multi-format, on-stage, carnage extravaganza, licensed from the only top stretch hit, feels like you with machine gun, grenades, rockets and dynamite up against millions of marauders just dying to see you **AVOL**, however. Civilians, nurses and the hostages you're meant to be rescuing are the only people likely to interrupt your continuous assault on relentless attacks by fast-swirling tanks, choppers, go-busters and samurais. Backed by Donkey's formidable marketing strength, this has to be a major contender.

Something of an underdog, being first off the production line from a new software house. They'll be concentrating on releases which combine strategic depth with playability. Here you infiltrate a guarded outpost by controlling four marine units to a step by step assault and see the results in an arcade style animated sequence. Featuring a repeatable, semi-random game area, and menu-driven command system you'll have a choice of six interrelated missions per game.

Public publishers Greenline are hoping to be brave and dry in a flooded market with this post-holocaust drive-em-up where you're one of a bunch of survivors out to stay alive and keep ahead against all odds. You have to fight your way to the Demon Dome and compete in a survival of motor destruction. Sounds like you'll need a touch of the old Mad Max driving skills for this one - i.e. kill everything that moves.

Another licensed outing from Ocean - probably among their best - this one being signed up before the film was made. **ROBOCOP**, the famous (anti-cybernetic) of RoboCop, the movie as well as the novel, with his brainless M44 machine guns in this futuristic carnage epic due out at the New Year. After its success on celluloid, RoboCop looks like being a screen to screen too. Hopefully some of the movie's dark humour will adapt; what could turn out to be a less believe shoot-em-up.



• A lone CPC wolf among the pack of versions due. Also due on ST, Amiga, PC, C64, Spectrum in early December



• Step by step assault on the C64 version, out in November. Other versions planned but no dates as yet



• Motor Massage auto-firing on the CPC. Also due out on Spectrum, C64, ST and Amiga mid-November



• Spectrum shoot-outs with a rating robotcop - Spectrum version due out mid-November. Out also on C64 and CPC late November

## DOUBLE DRAGON MILBOURNE HOUSE

34

## GALACTIC CONQUEROR TTS

25-1

## GALDRAGON'S DOMAIN INTERPRET

15-1

## SHOGUN REEL

2500-1

Michael Ewens's loggia for the Yuletide season - a competitive pseudo-3D scrolling beat-em-up in which you live it hot and run on your girlfriend from a whole bunch of psycho using the delicate skills of swordplay. One based on data, known and guess work, sworded calm among scenes of urban tension. Reducing, among other adventures, leather-clad women with whips. A case of two-player battle alone where you get to kiss the girl on completion. There's if you haven't failed for the whirling women instead!

You use the Starboard Ed. Really Located in the centre of your galaxy is Galileo, one of the final. In League, where surveillance, such have detected an enemy invasion. So it's time to dip into your Theater Cloud II lights, get out to the remote regions and do the business. Galactic Conqueror will attempt to combine fast, cut-up action with strategic sophistication. What are you waiting for? Your brand new fighter arrives next week.

Interceptor enter this impressive interactive role-play library into the end of your challenge. You take the role of a barbarian hero as a search for five gems held by powerful creatures in the Lands of Moroon. Rather than merely exercising your various combat skills you must gain information and employ stealth and cunning to overcome your various opponents. Gaining a fair amount of magic might not go amiss either.

8 Ninja missions each with 4 separate stages take you through sword-swinging and fast-thriving cut with magic in a single-handed rescue mission. Not only do you have to use your Ninjutsu mastery to do the scenes of drugs and samurai - you also have to take out a helicopter! How you might achieve this with only a sword and throwing star would probably take even the greatest of our philosophers. Unlikely to be a Christmas hit - it's not out until January!



• D1 cars often come in handy as crude weapons in ST, DO. Also due out on Amiga, PC, C64, Spectrum, CPC mid-November



• An explosive smash for the Amiga? Also due out on ST and AT late November



• ST Galdragon's - a main contender? Also due out on Amiga mid-November



• An early Amiga screenshot of the star-thriving Shoguns. Also due out on ST/C64/CPC/Spectrum in January

## B-TYPE MEDAGINE

41

Medagazine's second bid at the top spot with this arcade conversion puts you in control of an 8-bit interstellar crab through 8 stages of non-stop mayhem in a spectacular shoot-em-up which you'll need to continually replenish your power rocks to navigate. If you thought you've exhausted every other arcade epic with ease then be prepared for a nasty surprise. A top-notch horizontal wonder in the vein of Alien &

as 3. Salamander et al. B-Type features massive sprite firepower and disarming creatures which'll require full use of your ship's mega-weapons. Probably the best coin-op arcade ever to have made the arcade.

• The ST version of this superior shoot-em-up arrives. Also due out on Spectrum mid-November and C64, CPC early December. Amiga version to follow in the New Year



## AND A FINAL OUTSIDE BET

Despite the dubious merits of killer arcade conversions, our track-side long shot is Giants from U.S. Gold - Out Run, 720, California Games, Nodding Thunder, Gunsteel 2 - all in the one pack for 8-bits for around £15 due late November.







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**How to get there**

**By Underground:** Nearest tube station is Hammersmith (Piccadilly, Metropolitan & District Lines).

**By Bus:** 266, 734, 716, 290, 30, 72, 73, 74.  
Car parking facilities available at the Novotel.

## DATABASE EXHIBITIONS



## Electrifying experience

After using my 538ST for a while, when I switch off there is a crackling sound from the back of the computer. Is this normal or is the machine faulty?

It depends on exactly where the crackling sound is coming from. If it's from the monitor it's more than likely just a discharge of static electricity which is perfectly normal and nothing to worry about.

However, if the source of the noise is the machine itself you need to have a checked. Start by making sure that the electrical plug is correctly seated up and all connections are secure. Then check the connection between the machine and the power cable which should be firmly seated in the socket. Make sure that things like your mouse and monitor cables - or those from external drives or printers, if you have them - are not pulling the power cable loose.

If the ST continues to crackle when you switch off, have your dealer take a look at it. It's probably not dangerous to you, although you might get a painful shock, but any stray electricity is definitely dangerous to your machine and could cause some very expensive damage.

## Reach for the stars

I am ready to upgrade from my Spectrum 128 to a 16-bit computer like the ST or Amiga. However, I want to continue comparing with my other hobby of astronomy.

Can you suggest the best computer for this, and tell me what kinds of software are available for astronomers?

There are lots of price and cost to this kind of question because any computer can be a useful tool in any kind of hobby. For example, without looking at specialist astronomical software, you could make extensive use of word processing, database and graphics software to keep a log of your observations, compile a database of the objects that interest you, draw diagrams and make sketches.

In terms of specialist software, the Amiga has at least one astronomical program - Planetarium from Microfusions - but I haven't been able to track down anything on the ST. Your best bet might be through public domain libraries - which leads us to PC-compatibility.

Generally speaking, PCs are your best bet for any kind of specialist software because they boast a vast amount of commercial and PD software. If you check out some of the American astronomy magazines you'll find a lot of software on PC. Moreover, if you want to take your computer/astronomy mix up further - like computer-controlled telescopes, for example - the PC has better expansion capabilities than either the ST or Amiga, especially in areas like real-time control.

## Lasers burn up budgets

We need a reasonably good desktop publishing system to produce company advertising leaflets. We like to do a newsletter for our clients

# Amiga growing

After some eight months with my Amiga A500 I've decided it's got to grow - but how? I have a limited budget and can't decide whether to buy a memory expansion or a second disk drive. What would you recommend?

I'm thinking about buying an Amiga A500 but I'm worried about the lack of expansion possibilities. Most additions seem to be for the A2000 but I can't afford the higher price.

I know there are memory expansion boards for the A500, but what about hard disk drives, and things like the PC bridgeboards?

The lack of expandability is one of the great weaknesses of the A500, but is the price to pay for the physical layout of the machine - you can't fit much into a case the size of the A500's (ST owners face similar difficulties).

As a first step in expanding your machine, I'd recommend you go for a memory expansion. More memory will probably be more useful; it will allow you to handle larger amounts of data.

too.

From our investigations, it looks like a Mega ST with Atari laser printer is the cheapest system at around £2,600, but even this is stretching our budget a bit. Is there a cheaper way to go?

The lower printer is the most expensive part of the system but obviously we need that for output quality. Would a cheaper computer work with the printer?

You've got your reasoning backwards here: in setting up a desktop publishing system, the last thing you need to buy is a laser printer.

The reason is that there are now a number of typesetting houses around the country who will happily outlay your designs on laser printers but when quality really counts, on type setting machines for a very reasonable cost.

Unless you're going to be cranking out a massive number of pages, your expensive laser printer will be sitting idle a lot of the time.

If you think you can't get your money's worth out of a laser, think about the Hewlett-Packard DeskJet which will give you near-on-drum-level quality but at a price of around £600 if you shop around.

## Back to the drawing board

I'm delighted with my Amiga 500 PC and the accompanying GEM software but there's one catch - I'm

you can write longer programs (if you're a serious programmer), and it will overcome a lot of the tedious disk-swapping because it gives you the space to create a usable RAM disk.

By contrast, not much software actually makes use of a second disk drive, and because an external drive uses up some of your precious RAM, many programs require you to remove the drive before they'll run.

As to further expansion, the choices really are limited because most manufacturers - including, sadly, Commodore itself - seem to regard the A2000 as the only machine worth serious attention.

However, there is one promising route. US company Pacific Peripherals produces an expansion chassis for the A500, called SubSystem 500, which sits beneath the Amiga and takes two A2000 expansion cards. So you can have more memory, or a bridgeboard for PC-emulation, or an internal hard disk, or most other 2000-



Commodore's Amiga A500: what happens when you want to expand it?

specific add-ons.

There is no official UK distributor of the product, but you could write to Pacific Peripherals, PO Box 14575, Fremont, California 94539, USA.

finding it very difficult to draw with a mouse. It's particularly difficult (impossible) to trace patterns and distributions.

In a recent TV program I saw people using what appeared to be a pen and some kind of special drawing board attached to large computer systems. Is there anything similar for the PC?

Yes, kind of yes... well, two or three anyway. There're called digitising tablets and popular PC versions are made by Chartwell and SanyoGraphics, as well as a couple of smaller companies.

Unfortunately you'd have to be seriously disenchanted with your mouse to consider one prices run to around £400-£500 - almost as much as your

entire PC. However, if you're that desperate, any large PC dealer should be delighted to sell you one.

There is a low-cost - and considerably cheaper - alternative. Acquire a piece of overhead transparency film - any good stationery store, like Foynter, will have it. Trace the drawing you wish to copy onto this, then place the film against your monitor screen where - hey! - it will stick thanks to the static generated by the monitor.

You can now copy the image using the on-screen pointer as your graphics package. Experiment with screen colours to give you a nice, contrasty image which will make the on-screen copying easier.

# Win a sub!

We want to hear the problems that are troubling YOU, but we also want to benefit from your wisdom. So please divulge us with any tips you've picked up on using your computer or on a widely-used piece of software.

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Defywire III	14.95	14.95	14.95	14.95	14.95
Defywire IV	14.95	14.95	14.95	14.95	14.95
Defywire V	14.95	14.95	14.95	14.95	14.95
Defywire VI	14.95	14.95	14.95	14.95	14.95
Defywire VII	14.95	14.95	14.95	14.95	14.95
Defywire VIII	14.95	14.95	14.95	14.95	14.95
Defywire IX	14.95	14.95	14.95	14.95	14.95
Defywire X	14.95	14.95	14.95	14.95	14.95
Defywire XI	14.95	14.95	14.95	14.95	14.95
Defywire XII	14.95	14.95	14.95	14.95	14.95
Defywire XIII	14.95	14.95	14.95	14.95	14.95
Defywire XIV	14.95	14.95	14.95	14.95	14.95
Defywire XV	14.95	14.95	14.95	14.95	14.95
Defywire XVI	14.95	14.95	14.95	14.95	14.95
Defywire XVII	14.95	14.95	14.95	14.95	14.95
Defywire XVIII	14.95	14.95	14.95	14.95	14.95
Defywire XIX	14.95	14.95	14.95	14.95	14.95
Defywire XX	14.95	14.95	14.95	14.95	14.95
Defywire XXI	14.95	14.95	14.95	14.95	14.95
Defywire XXII	14.95	14.95	14.95	14.95	14.95
Defywire XXIII	14.95	14.95	14.95	14.95	14.95
Defywire XXIV	14.95	14.95	14.95	14.95	14.95
Defywire XXV	14.95	14.95	14.95	14.95	14.95
Defywire XXVI	14.95	14.95	14.95	14.95	14.95
Defywire XXVII	14.95	14.95	14.95	14.95	14.95
Defywire XXVIII	14.95	14.95	14.95	14.95	14.95
Defywire XXIX	14.95	14.95	14.95	14.95	14.95
Defywire XXX	14.95	14.95	14.95	14.95	14.95
Defywire XXXI	14.95	14.95	14.95	14.95	14.95
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Defywire XXXIII	14.95	14.95	14.95	14.95	14.95
Defywire XXXIV	14.95	14.95	14.95	14.95	14.95
Defywire XXXV	14.95	14.95	14.95	14.95	14.95
Defywire XXXVI	14.95	14.95	14.95	14.95	14.95
Defywire XXXVII	14.95	14.95	14.95	14.95	14.95
Defywire XXXVIII	14.95	14.95	14.95	14.95	14.95
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Defywire LIV	14.95	14.95	14.95	14.95	14.95
Defywire LV	14.95	14.95	14.95	14.95	14.95
Defywire LVI	14.95	14.95	14.95	14.95	14.95
Defywire LVII	14.95	14.95	14.95	14.95	14.95
Defywire LVIII	14.95	14.95	14.95	14.95	14.95
Defywire LIX	14.95	14.95	14.95	14.95	14.95
Defywire LX	14.95	14.95	14.95	14.95	14.95
Defywire LXI	14.95	14.95	14.95	14.95	14.95
Defywire LXII	14.95	14.95	14.95	14.95	14.95
Defywire LXIII	14.95	14.95	14.95	14.95	14.95
Defywire LXIV	14.95	14.95	14.95	14.95	14.95
Defywire LXV	14.95	14.95	14.95	14.95	14.95
Defywire LXVI	14.95	14.95	14.95	14.95	14.95
Defywire LXVII	14.95	14.95	14.95	14.95	14.95
Defywire LXVIII	14.95	14.95	14.95	14.95	14.95
Defywire LXIX	14.95	14.95	14.95	14.95	14.95
Defywire LXX	14.95	14.95	14.95	14.95	14.95
Defywire LXXI	14.95	14.95	14.95	14.95	14.95
Defywire LXXII	14.95	14.95	14.95	14.95	14.95
Defywire LXXIII	14.95	14.95	14.95	14.95	14.95
Defywire LXXIV	14.95	14.95	14.95	14.95	14.95
Defywire LXXV	14.95	14.95	14.95	14.95	14.95
Defywire LXXVI	14.95	14.95	14.95	14.95	14.95
Defywire LXXVII	14.95	14.95	14.95	14.95	14.95
Defywire LXXVIII	14.95	14.95	14.95	14.95	14.95
Defywire LXXIX	14.95	14.95	14.95	14.95	14.95
Defywire LXXX	14.95	14.95	14.95	14.95	14.95
Defywire LXXXI	14.95	14.95	14.95	14.95	14.95
Defywire LXXXII	14.95	14.95	14.95	14.95	14.95
Defywire LXXXIII	14.95	14.95	14.95	14.95	14.95
Defywire LXXXIV	14.95	14.95	14.95	14.95	14.95
Defywire LXXXV	14.95	14.95	14.95	14.95	14.95
Defywire LXXXVI	14.95	14.95	14.95	14.95	14.95
Defywire LXXXVII	14.95	14.95	14.95	14.95	14.95
Defywire LXXXVIII	14.95	14.95	14.95	14.95	14.95
Defywire LXXXIX	14.95	14.95	14.95	14.95	14.95
Defywire LXXXX	14.95	14.95	14.95	14.95	14.95
Defywire LXXXXI	14.95	14.95	14.95	14.95	14.95
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# SPEX

**B-Type** is my type

If you feel evoked of the colonial memory, wearing graphics, street sport and our sense is based on the local Yappier 18th machine. I can only suggest you rent your software supplier and demand a copy of Electric Dreams R-Type is a game which will restore your faith in our rubber (or plastic) friend.

Converted from the 4K gold-plated IREM com-ep, A-Type is a beautifully scintillating shoot em up in the finest tradition. Gain your revenge on the evil Bido Empire by flying through eight levels, each overflowing with a variety of alien ships.

The enemies you meet along the way are tame compared to the evil of level guardians. Though, the treasure at the end of the first stage occupies half the screen, vaggies his deeply laid and still seems to die at you.

Deleting him will mean upgrading your system's system to collecting tobacco. There's



■ That nation who wears the trousers in the company?

a wide range of weapons on offer including beam lasers, the spectacularly impressive reflective laser, beaming missiles and a pool, which can be put in front of or behind your ship as a shield.

Even the standard blower you start with isn't too powerful; rapid brushing of the fan button causes a steady stream of BEEP, or you would expect. Hold it down and a note at the bottom of the screen: DARK to the screen when your laser is fully charged and

Come back, Sir Clive!

Amtrak never has seemed to like the Sperry much. Take this Christmas, for example, a time when 8-bit computers will have to offer good value for money to tempt punters away from the ST and Amiga.

That can't be. My sugar hasn't announced any price reductions or special deals, which means, as far as I'm aware, the 2 will retail for £130 and the 3 at £230. Even to my voracious business eye it doesn't look to be a good deal, especially when Cannomobile are touting the C64 and games and a personal server for £150. Perhaps more attractive to the first-time buyer are the Sogo and Winbuds consoles.

You can't play anything which needs more than joystick wiggling and five buttons pressing, but the string of arcade titles and excellent graphics are sure to please. Temping, Wharfedale's Uncle Clive when he said last?

you untuck a large insect-shaped bolt, not indicative to the general well-being of the recipient. One of these mega-shots can take out three or four sheets of a limb so it's worth clearing up whenever possible.

E-Type's played a glorious technician without a hint of colour clash. This means it better looking than the drab mechanisms of other arcade conversions. The basic score and satisfying addictiveness of the original is also retained, making this a pretty damn impressive Spectrum blaster.

Out now, it's worth every penny of its \$9.95 price tag.

Oh, who are we waiting?

After, Miles Gordon Technology announced their Spectrum compatible SAM were a vast enough to let Sony enthusiasts enjoy next-gen. There was a 350k computer with an improved graphics display and networking facilities – better for multi-player games which we could upgrade to and still use of our Spectrum software on. Numerous delays have meant SAM probably won't go on sale until the new year with a preview at the December Modcon.

Launch price is expected to be £150 with a 3.5 inch disc drive for the machine selling at £199. M3 UK is saying we see just how good this heeled up Speedy is going to be.

## Hella, Berlinon

Codemaster's publicity got me turned throughout the industry for their complete awareness. The area was soon up until now male no significance what compared to the latest and greatest Codemaster's!

It features the whole betting class, with a few outsiders thrown in to make up the numbers in a suitable team photo style. Hopefully the game is published. 4 Soccer Swindlers will be better.

It is the best release on the new Q40 Label which means it'll cost £1.35 on tape and £12.99 on +3-disc. The package includes 4 cd-press soccer games and features simulation on feature drive.

Other releases from the masters of indie include *Pro Skateboard Sam* and *Pro Eight*. *Sam* has been selling at the more traditional \$19.99 price. The tracks sound fun, and includes most of the features from the real thing like straws, lemons, conversations etc and a few features which aren't but have been included anyway.

It's not very realistic (I can't remember seeing *Flamingo* at Tropicana) and I should know having played the game and have got the score and various odd shaped pieces of anatomy to prove it.

If you've got any tape, picture, comments and generally anything you'd like to pass on to the rest of Specialised, please write to me or Elysia.

Rochelle A. French

## TO ALL SEGA OWNERS

Hello!

My name is Tony Takoushi and I will be running the Sega Club with the help of the delectable Mandiyla (more on her later!)

The club has been set up to give Sega console owners the very latest news on happenings in the Sega world, this will include news on the latest hardware (joysticks, 3D glasses and light gun to name a few), software and THE ARCADES!!

As you are probably aware Sega is NUMBER ONE in the arcade world with hits like Space Harrier, Outrun, Hang On, Thunderblade and the latest smash hit Afterburner. In coming months there will be promotions for arcade merchandise including T-Shirts, stickers, badges and sweatshirts from Sega arcade hits.

Each issue of the newsletter will feature news, reviews, competitions and club promotions. Each issue will feature an EXCLUSIVE review of a new Sega game, the hit co-op Thunderblade is featured in this issue. So if you want the latest news and reviews join the Sega Club! When you have registered as a member of the Sega Club you can ring in to the Sega Hotline with any questions you may have about the club or get the latest news. You can also leave your high score and if it is good enough it will be listed in our Master Blasters list in coming issues!!

Both Manolya and myself will be manning the Hotline and if you happen to be stuck at a certain point in a game then use the Hotline for some tips, we are here to help you.

A national network of user groups will be set up, BUT IT WILL NEED YOUR SUPPORT!! I am looking for Sega owners to set up local clubs around the country and I will attend your club nights and let you all about the latest games and maybe even demo the latest prototypes to hit the UK as well as giving you special Sega merchandise. Club visits will be feature articles in future issues of the newsletter, so now is your chance to be famous, get a club going and let us know!!

The Sega Club is being set up FOR YOU, so do write in and tell us what you want to see or if there is anything you do not like.

So do not waste any more time... fill in your details below!

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## MACHINE-SPECIFIC COLUMNS



## Sports-bra's

Even so, the IBM and Amiga became popular software companies have considered the Spectrum. CPC and C64 machines also are going down as 8-bit. "I don't think the result will be much but software being produced, outside the night."

The one ray of hope, because all machines have their own strengths and weaknesses and by writing software to the lowest common denominator users are being denied the chance to sample their machine's potential.

(They factor has even started to be left by Amiga users, whose software is tending to be limited to the ST's capabilities—and the move now is likely to increase if the PC takes off as a games machine). Amiga's levels continue to decline.

The main benefit a software house would see this way is that it allows quick conversion across all formats. But at what cost to quality? I was agreed with the main net write to software houses wanted them:

## Game of the week

The games I've been playing at work is *The Last Ninja 2* by Sionee Thaw. It's a fantastic blend of totally addictive and ingenious. It is superbly visually really "computer" as a title like atmosphere... with some of the best sound effects and backdrops I've seen on any home computer. (*Archie* included). Audio quality is also high with some great sound-effects and some... played like the sticks are absolutely tough.

My only reservation concerns TLN2's bizarre graphics... some different vehicles including boats are shown in black and

- **OTHER VERSIONS:** Who cares? (Only joking, but the 4th Edition was all)
- **PERSONAL VERDICT:** Although *Sliver* is a hard game to play - a smidge of overkill - it takes you through some really good screens - and is one to look out for the next time you visit your local software dealer.

### C64 utility of the week

If you're been having problems with your (MSI/7) disk drive lately, you'll probably be interested in the disk alignment package from Financial Services Software Limited. The package consists of software - which gives an on-line, status report as you design the drive - and a comprehensive manual which details all the procedures involved. Further details from FSSL, 10 High Street, Northwich, Cheshire, WA9 0JG. Telephone: 00306 567250.

### Going international

The long-awaited Rocket Range from Line  
software is due for release in the USA at any  
time soon, with Microsoft's 486 launch the  
game will have already advanced.

Meanwhile, my award for the best demo is the patch game by Thatchy - *Thatchy's Patch*. It has some terrific examples of full-screen action, such as a massive space-cruiser battle and some possible scenarios. Hey guys, why don't you give it a try?

### Infinite lives for Radionuclides

● The interior shows signs of MEANTIME in the hall of fame.

Cry from the heart

Humble apologies to all. I'm afraid I'm just too lazy to produce C&G game hints, tips and jokes all by myself - this is where you come in.

Send me news, news, hints and tips, jokes, machine code/basic routines, demos, techniques and anything else you'd like to see in this column and I'll share it with your fellow C&G users.

The address is at the bottom of this column.

## C54 budget name of the week

These do-it-all seeds to be sown, space for trust, get points at the end of the magazine, so there's a nice reward of a Silver, a market town. Because that's what it is (\$2.99).

## Sign-off

Just a reminder about the Canadian Student Travel program on page 29. Hopefully it'll be able to go on a run down on the street as a major winter sport - as the students say. More of these items and tips are rolling in to Sector 14. New Computer Express, 4 Queen Street West, 885-1823.







A last look at the week's events, by cynical old hack Private I

## The writ stuff

Never send a boy to do a man's job, dept:

One of the things that makes this industry truly great is its ability to allow to keep friends employed. These poor briebs would be lost but for the fact that they are obliged to write at least one or two times a year.

So it comes as no surprise that interested friends are currently being consulted about the debut budget label The Power House. You remember the outfit: forever bringing on about selling several hundred thousand games right up to the point where it went bust, having sold at least - oh, a few dozen of its £1.99ers.

What is now being considered by disk supplier SJR is a fraud prosecution against boss Ashley Hildebrandt, after some interminable row of the "cheque" in the past variety.

Young Ashley denies all. SJR is sticking to its guns. Meanwhile, the lawyers grow fatter.



● Hildebrandt: The writ's all the fun!

Now this is tough stuff. Firstly, imagine that you are Amstrad (yes - put on the beard, adopt harsh tones, start swearing, etc.). Then set up a Bulletin Board Service (BBS), get someone technical to help. Now the difficult bit: what do you run it on? Obviously an Amstrad, would that be? Maybe a 1512 (if you can get one), perhaps a 1540, or even a PC 2000.

No quib. If you really were Amstrad, you'd've used an Opa. Honest. That's what they're doing. And far be it from us to say anything about belief in your own product, reliability etc etc.

## And the Meek shall inherit...

Once upon a time, there was a character called Mike Meek. He built up the games software company Mikro-Gen into a decent size - despite bankers loans into hardware with Mikro-Plus - and was duly taken over by would-be computer giants. CSD is the way of these things. CSD promptly went bust. Meek lost his firm and his fortune.

These days, he has gone back to basic and is to be found running an software market stalls in the Thames Valley. Sadder but wiser, he has taken advice in the fact that bowling out your wages is far less damaging to your wealth than wearing out your - er, bank balance running a software publisher. ●

## Hype springs eternal

Here's the first in a series of easy-to-enter (that is impossible to win) competitions in which you have the chance to prove that you really understand the meaning of common computing terms.

This week: The Computer Games Market. What do the following mean?

1. "Our new game has Cartoon-like graphics?"

a) Our new game has wholly anything like it? b) Were lying of We have a profound understanding of the function of irony in so all too serious environment (ie, b).

2. "Quite a good game"

a) I'm a pathetic wimp writing in a limp-sentimental monthly b) I am ever so slightly aware of the possible connection between a bad review and the loss of ad revenue.

3. "This is an extremely important technological breakthrough"

a) It actually works b) It's not from Sinclair Research c) It's extraordinarily boring, but we've all got to make a living.

4. "It's so good we could've released it as a full-price title"

a) It's a psychological far b) Full price to us means £1.99 of its got Strangler in the title and I work for Codemasters.

5. "We've been working on this for 300 man years"

a) 3,000 people could only stand the firm for a month b) 7,300 people

could only stand the firm for a fortnight c) It's an utter lie.

6. "Our products have a long shelf life"

a) They don't sell b) They're educational titles, but I don't say that c) both.

7. "You really do get an awful lot of extra goodies in the box"

a) Er, we're not exactly terribly confident of the game itself b) We've cobbed together a load of old goo for tapestries and binged a fiver on the price of the same bundle that didn't work last time.

8. "Mega"

a) Unquestionably dreadful b) I'm the back who swapped his brain for an MSX c) This concerning lark's money for old rope, sort of.

9. "Truly interactive"

a) Some two driven where you have to pretend you're a goblin b) Some two driven where you have to pretend you're not a goblin c) Some two driven with absolutely no possible interest whatsoever unless you have very specific sexual desires for er, a goblin.

10. "It's just like flying an F-16 bomber"

a) It isn't b) It's a psychopathic fascist living out apocalyptic infantile fantasies.

Send your entries on a postcard to: Private I, c/o Express, etc. Alternatively, wait for next week's mega, truly interactive comp... ●

● No, no, look what I've found on the editor's word-processor. It's little discoveries like this that make all the late hours I put in alone at the office worthwhile. If my column isn't here next week, please send your contribution to: PSsst Defence Point, New Computer Express, etc.

## MEMO

Private and Confidential:

From: Launch Editor Chris Anderson

To: New Computer Express Machine-specific columns

Well done, chaps on your first contributions to Express. I thought you'd be interested in my personal review of your efforts together with a few other things. Oh, and get 'em in on time next week, eh!

PC UPDATE: Remarkable story about Freezone USA - have you got shares in that company by any chance? The staff I put in this issue's letters page as the bride is just a joke by the way - it was, actually, the wife kept the £20 note. ● ● ● ● ●

ST CLUB: Brilliant column, Richard, but your rates are far too high. How am I supposed to keep the cover price at £6p? ● ● ● ● ●

AMIGA BLITZ: Jason, what on earth makes you think Amiga owners are interested in music? Or in Arthur C. Clarke for that matter? How about lots on Interceptor? I'm stuck under the bridge. ● ● ● ● ●

QX CORNER: I don't think any normal person would understand a word you said. But then, would a normal person buy a QX? ● ● ● ● ●

OPC SCHE: Good first effort, Steve, including 'honest' criticism of Amstrad themselves. Bill games-based though. And you were the only one on Meek. It's obvious the man is Mulling. ● ● ● ● ●

DEER BOX: Too short. ● ● ● ● ●

SPEX: Too long. ● ● ● ● ●

PCW FITCH: Sorry, Rob, I don't think anyone will get the Arabic headline page. And a lot less of Howard Fisher next time please. The chap's quite rich though as it is. ● ● ● ● ●

SECTOR 64: You're free. ● ● ● ● ●

REXTRA: Sorry, but the only copy that arrived on time, I just hope you're right in thinking another WEX owner out there to read it. ● ● ● ● ●

## NEXT WEEK

### ● "What's this socket on the back here?"

"That's so you can plug in a 64-bit expansion."

Just one of the unbelievably crass replies given us by a high-street computer department salesman when we went shopping for a computer. We'll be printing some other edited highlights off our hidden tape-recorder. It's all part of a detailed guide to selecting the right computer for you. Don't miss it.

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